

Aug 19

OF THE

VELDROTH







*Privately published
in a limited edition*

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1939

VOYAGES *of the* VELERO III

A PICTORIAL VERSION

with

HISTORICAL BACKGROUND

of

SCIENTIFIC EXPEDITIONS

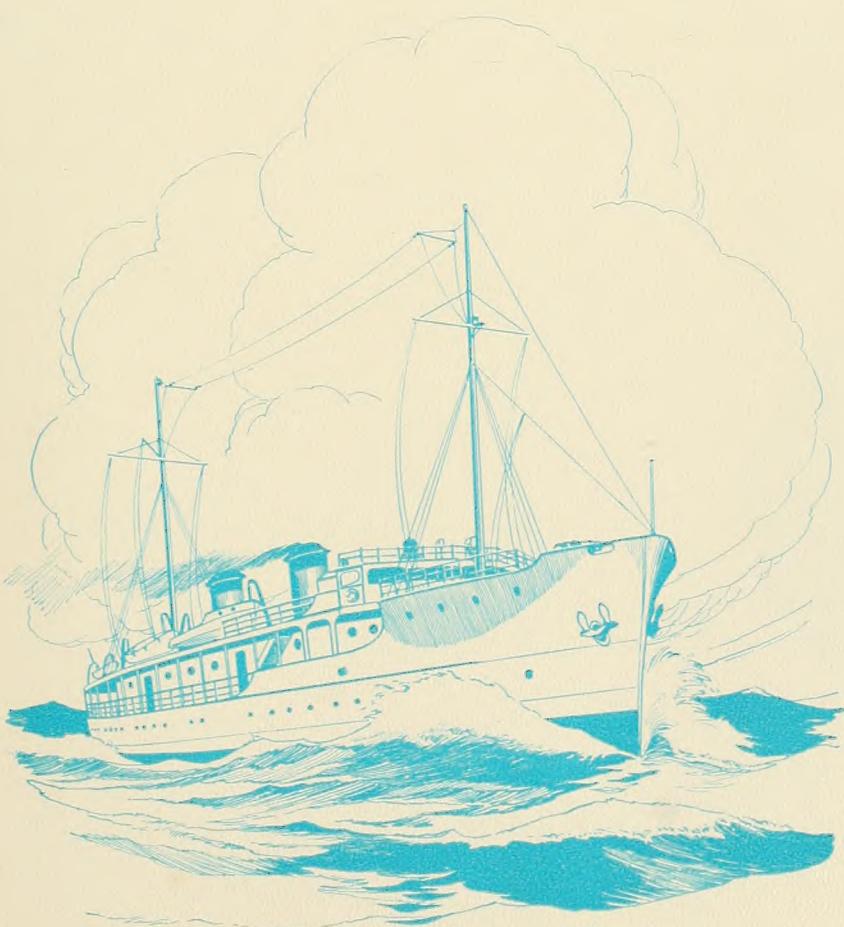
THROUGH TROPICAL SEAS

TO EQUATORIAL LANDS

ABOARD M/V VELERO III

by

DE WITT MEREDITH

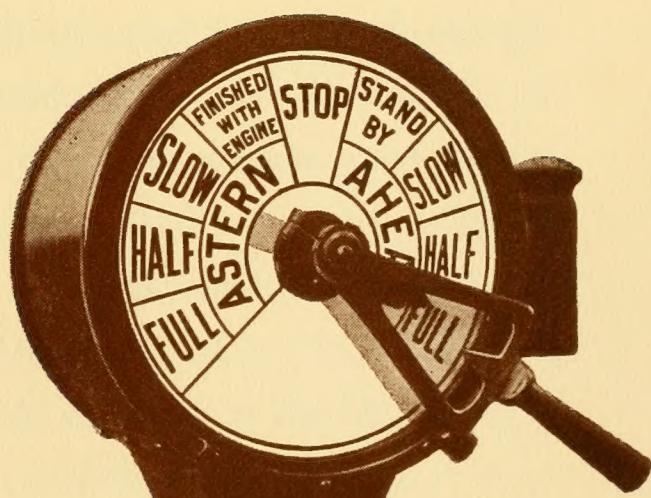


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FOREWORD

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IT IS THE PURPOSE of this volume to present a pictorial account of the work of ALLAN HANCOCK EXPEDITIONS on voyages of exploration to tropical seas aboard the cruiser VELERO III, and to portray something of the historical background and multiple activities of her master and builder, CAPTAIN ALLAN HANCOCK.

★ *Our goal has been to choose material of general interest rather than that of scientific import, informative rather than strictly educational, entertaining rather than erudite.*

★ *Available to those intent upon specific scientific data are abundant facilities of the ALLAN HANCOCK FOUNDATION for Scientific Research at the University of Southern California, Los Angeles.*





INTRODUCTION

SHOULD one descend from the loftiest mountain peak to the seashore, and possess the aquatic ability to continue on to the ocean's greatest depth, he would discern that life is most abundant along coastal regions of the sea. At extremes of elevation or abyssal depths few active creatures exist.

As though to strike a balance somewhere in the median plane where land and water meet, the earth's lowlands are most productive and shallow waters seethe with living organisms. Continental shelves and littoral zones of insular shorelines are most thickly populated. Yet comparatively little is known concerning marine biology or related branches of marine science.

Salt water covers three fifths of the globe. In the abstract it has long been recognized that marine organisms and oceanic phenomena play a most important part in the complex organization of nature. But scientists have scarcely scratched the surface of potential knowledge to be gleaned from critical examination into the mysteries of the sea.

Recognizing an almost virgin field for scientific investigation in the myriad forms of tidal zone flora and fauna, Captain Allan Hancock many years ago became interested in marine exploration. Moved by a pioneering spirit, this interest developed a series of projects which have resulted in lasting contributions to the advancement of zoology, botany and related branches of science.

Perpetuation of the work begun is assured by the Allan Hancock Foundation for Scientific Research on the campus of the University of Southern California in Los Angeles, and the presentation to the university of the exploration cruiser *Velero III*. These gifts symbolize a purpose and an ideal. There was purpose in providing means for the extension of frontiers of knowledge and idealism in making it possible for the greatest number of persons to benefit from results achieved.

Over a period of more than two decades, voyages of the motor cruiser *Velero III* and her predecessor craft have accumulated a vast amount of data and materials that are highly prized by scientists and treasured by institutions sharing in the collections. Annual cruises have systematically covered western coast lines of the Americas from the Golden Gate of San Francisco Bay to the waters of Peru and Chile. They have included exploration of the length

and breadth of the Gulf of California and visits to far-flung islands off the coasts of Mexico, Central, and South America.

Several of the expeditions have concentrated upon the equatorial Galápagos Archipelago and the vast Humboldt Current which surges northwestward out of the Antarctic along the coast of South America, to dissipate itself in the tropical Pacific Ocean.

Any detailed account of the results of such extensive expeditions would become so voluminous as to be formidable. Important data and countless thousands of specimens collected on the long voyages are carefully preserved in the archives of leading scientific and educational institutions which have been studiously served by the purposes of the expeditions.

Product of intensive taxonomic and ecological research is the growing library of scientific papers, some of them monographic in scope, which are accredited to Allan Hancock Pacific Expeditions. Several of the best known scientists of the day in their highly specialized fields have participated in the expeditions and contributed their share to the tomes of knowledge.

Foundations for the advancement of this scientific work have been well laid and academic goals are well defined. As continuation of the work passes from pioneering stages to the agenda of higher education in established institutions of learning the attention of scholarly minds has become focused on achievements and objectives of the expeditions.

At this milepost it is perhaps not amiss to observe that the institutional work involved is inseparably linked with the history of Los Angeles. Inspiration to explore new frontiers and pursue scientific lore may be found not only in the pioneer heritage of a native son of forty-niners but in early association with paleontologists who unearthed fossils of prehistoric mammals from viscous asphaltum of the tarry springs on old Rancho La Brea.

In his youth Captain Hancock became imbued with that acute curiosity which spurs scientists to perform the most arduous and often ungrateful tasks in seeking to fathom the secrets of nature. In order to supply something of that background it seems desirable to present a brief biography of the man and fragmentary accounts of his many activities. Light on the past may serve to illuminate the present.





BIOGRAPHY

AROUND Cape Horn in 1849 the great white wings of an old windjammer bellied to the breeze, her bowsprit pointing northwestward toward San Francisco. At the same time another type of schooner rumbled, creaked and groaned over the historic Santa Fe trail to California. Major Henry Hancock was aboard the sailing vessel. Ida Haraszthy, as a little girl, rode in the prairie schooner. These two forty-niners afterward became the parents of George Allan Hancock.

Major Hancock, born in New Hampshire of English parents, sailed from Maine around Cape Horn when the west coast was in the midst of a mighty turmoil over gold discoveries. Law graduate of Harvard University, schooled in military tactics and surveying, a veteran of the war with Mexico in which he won his major's commission, Henry Hancock landed at San Francisco, made a stake in gold at Mormon Island and later went into the parallel professions of legal practice, surveying, and settling land titles.

Politics too figured in the career of Henry Hancock. As a member of the State Legislature from Los Angeles County, he established a lifelong friendship with Count Agostin Haraszthy, who was the Assembly representative from San Diego County. Born in Hungary in 1812, a scion of the ancient nobility, Colonel Haraszthy, as he was known in the west, had been honored by Emperor Ferdinand with offices of the crown until a revolution against Austrian rule swept away the Haraszthy ancestral estates in 1839-40.

Coming to the United States of America, Colonel Haraszthy pioneered in agriculture in Wisconsin, founded Sauk City, engaged in steamboating on the Mississippi and Wisconsin Rivers, eventually salvaged something from the family estates in Hungary, and in 1849 headed a covered wagon train across the western states to San Diego. At this time his eldest daughter, Ida, was six years of age. She was born in Imperial, Illinois, in 1843.

Colonel Haraszthy was well launched upon a brilliant political career in San Diego but again was lured to agriculture by his pioneering spirit. He established himself in Sonoma County, and figured largely in development of the vast grape and wine industry of California. Pioneering once more, Colonel Haraszthy acquired the Hacienda San Antonio near Corinto, Nicaragua, planning to develop agriculture and a hardwood industry. He died tragically

in 1869 when the rain-soaked limb of a tree snapped beneath his weight and plunged him into an alligator-infested lagoon.

Ida Haraszthy was educated in California, New York, and Europe and was widely traveled before she was twenty. With her mother, a woman of distinguished Polish birth, she had crossed America in a covered wagon, sailed around Cape Horn, and made two voyages to Europe. Having first met Major Hancock as a friend of her father when she was a child of nine years, another meeting eleven years later blossomed into romance and they were married in San Francisco in 1863. By this time Major Hancock had become a resident of Los Angeles.

George Allan Hancock was born of this marriage on July 26, 1875. A twin brother, Harry, was short-lived. Another son, Bertram, was born to Major and Madam Hancock April 11, 1877. The boys spent much of their youth in Santa Monica and on Rancho La Brea. Major Hancock died in January, 1883. Widowed at forty, with two boys to educate, Madam Hancock persisted through years of struggle to carry out plans of her husband in regard to Rancho La Brea, an old Spanish grant which he had purchased.

At fifteen, Bertram died, and Allan carried on with his mother. He dug brea with pick and shovel on the rancho and hauled it to town to be sold for fuel; plowed and raised grain crops; tended the livestock and, at odd times, studied music. When oil deposits were tapped on the old rancho, he worked in the field, learned the business, and finally began drilling his own wells, bringing the field to its maximum production. In 1909 Madam Hancock married United States District Judge Erskine Mayo Ross, an outstanding California jurist. After the death of his mother on March 15, 1913, Captain Hancock continued with the development of Rancho La Brea. He took keen interest when Dr. John C. Merriam began excavating prehistoric mammal bones from a plot near one of the ancient tar pits.

After a time the tract embracing Hancock Park was set aside as a shrine of archaeological interest and donated to the County. In the interest of progress, the old oil wells were closed down and the derricks removed. With civic needs and the greatest good of the community in mind, the remaining acreage of Rancho La Brea was developed along conservative lines.



CAPTAIN ALLAN HANCOCK

THE OLD
SPANISH AND MEXICAN
RANCHOS
OF LOS ANGELES COUNTY



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RANCHO LA BREA occupies a position on this map just to the westward of Pueblo de Los Angeles with historic El Camino Real crossing its upper borders and extending on through Cahuenga Pass. The map is reproduced through the courtesy of the Title Insurance and Trust Company of Los Angeles.



ORIGINAL HOME of the Hancock family on Rancho La Brea

RANCHO LA BREA homestead as it appeared in the 80's





AERIAL PHOTOS on this and succeeding pages illustrate growth and development of historic Rancho La Brea from rolling fields to a teeming metropolitan area typifying the highest class residential and business areas. Opposite, above, is a portion of the rancho as it appeared in 1922, looking northeastward across the intersection of Wilshire and La Brea Boulevards. Below it is an aerial view of the same district taken nine years later, on March 15, 1931. The same intersection looms prominently in the central foreground. Westward, toward the left foreground, begins the famed "Miracle Mile" of Wilshire Boulevard. The photograph above looks northwestward across part of the rancho from the intersection of Third Street and Rossmore Avenue. It was taken in 1922, showing intermediate development of the tract. Schools have been erected, streets and improvements laid out, and residential building has begun.







SKYSCRAPERS RISE along the borders of Hancock Park and modern structures constrict the old rancho as progress hits a new stride in 1935. Oil derricks have vanished from the tract adjoining Hancock Park in the center of the picture above. Carthay Circle is seen in the left foreground. Pictures on the opposite page were taken in 1931. The upper looks southwestward from the heart of Hollywood to the shoreline of Santa Monica Bay while the lower points eastward from Beverly Hills across Hollywood to Los Angeles. The Los Angeles City Hall may be seen in the dim distance.



HOLLYWOOD HORIZON from the north end of La Brea Avenue fans out across the coastal plain like a sparkling magic carpet, bejeweled at night with myriad lights. On those plains once roamed prehistoric monsters known to man only by the finding of priceless caches of skeletal remains in the tarry depths of asphaltum pools on the Rancho La Brea. Since their discovery the fossils have excited the interest of scientists throughout the world and the Hancock Collections at the Los Angeles Museum of History, Science and Art have come to be recognized by students of paleontology as being among the finest in the world.

LA BREA PITS

IN the mellow light of early morning when bird songs are cheeriest and the dew lingers to freshen an awakening breeze, a robust man of forceful mien with heavy jowl and shaggy moustache, strode beneath blue gum trees on Rancho La Brea toward the famous asphalt pits.

Colonel Theodore Roosevelt was noted as an early riser. He came to this shrine of antiquity long before most Angelenos were astir. A great naturalist, historian, statesman and commentator—twenty-sixth President of the United States—he disclosed an amazing knowledge of prehistoric mammals and discussed fossil remains with the familiarity of a savant.

Of the collections of bones from the brea pits he said:
“Wonderful! This is the most extraordinary storehouse of fossils in the world!”

On this visit to Los Angeles, July 26, 1915, Colonel Roosevelt's schedule allowed him only twenty-four hours in the city. So the dawn was barely turning to day when he sped to the rancho to inspect the pools of liquid tar and observe workmen in the act of excavating bones of extinct mammals which roamed the coastal plains long before the age of man.

The distinguished visitor instantly recognized femurs, skulls, ribs, vertebrae and other bones of various animals and kept up a running fire of learned comment on the finds, exclaiming on the relative size, ferocity and power of different specimens.

After visiting the tar pits Colonel Roosevelt was taken to the Los Angeles Museum to view the world's greatest collection of western fossil remains and to inspect some of the mounted specimens. The immense head of a prehistoric bear impressed him, and there seemed a touch of regret in his voice that he had not lived in that era when the world was young, to hunt the animal.

“It must have weighed 3,000 pounds,” Colonel Roosevelt said. Remains of the great bear, saber-toothed tiger, Imperial elephant, mastodon, giant ground sloth, large dire wolf, great lion, antelope, bison, horse, camel, tapir and dozens of other animals of the Pleistocene Age proved of interest to Colonel Roosevelt.

Early in the same year Captain Hancock had conveyed to the people of Los Angeles City and County the gift of Hancock Park, embracing the treasure pits, together with thousands of fossil

remains which were uncovered by the Los Angeles Museum under a permit granted in 1913. The presentation was made to honor the memory of his father and mother, Major Henry Hancock and Madam Ida Hancock-Ross.

Even today gas bubbles through the sticky mire of the tar pools where so many thousands of wild animals were trapped as they came to drink surface water collected on the pools. The gas seeps upward from unknown depths to form iridescent globules on the restless surface of the seething petroleum springs. The globules break and settle back into slowly dissolving concentric ripples, suggestive of the irresistible adhesiveness of the sticky ooze.

Scientific interest in the tar pit fossils on Rancho La Brea was first aroused in 1875 when Major Henry Hancock presented the fang of a saber-toothed tiger to Professor William Denton of the Boston Society of Natural History. Prof. Denton at once recognized the tooth as an important paleontological find and tentatively described it as that of a *Machairodus*, an old world feline of Pleistocene times. The tooth was much larger than any previously known. Subsequent excavations produced complete skeletons and the monster cats were named *Smilodon californicus*.

Fossil remains continued to pile up as brea from the pits was mined, but scientists failed to pursue research until 1905 when bones of a gigantic ground sloth of a past geologic age were discovered. Within the next decade scientists from all parts of the world were attracted to the pits and several institutions were granted permits to examine the ancient deposits. Los Angeles County was granted the exclusive right to conduct the work.

Skeletal elements of Pleistocene mammals totaling 4,264 representative individuals were recovered from the deposits. More than ninety per cent were carnivores; approximately nine per cent were herbivores. More than half of the carnivores belonged to the dog family, including the large dire wolf, gray wolf, gray fox and coyotes. Among the other carnivores there predominated the saber-toothed tiger, the great lion, puma, lynx and smaller cats.

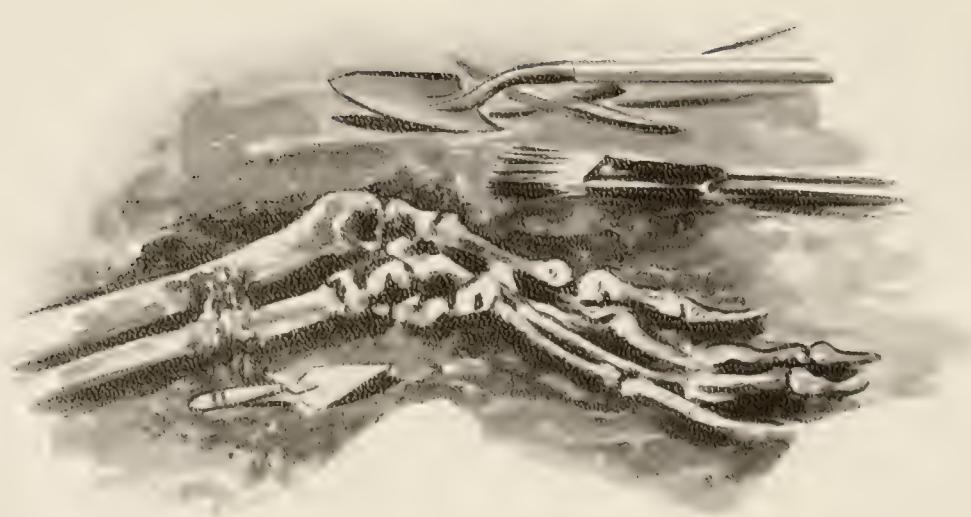
Bison, horses, ground sloths, camels, antelopes, elephants, mastodons, deer, peccaries and tapirs were among the plant feeders trapped in the tarry pools. The pits yielded elements of 4,189 birds and thousands of rodents, insectivores and bats.



SMILODON CALIFORNICUS is the scientific name which paleontologists have given to the prehistoric feline represented by the sculptured head above. This was the Saber-tooth Tiger which preyed on other great beasts of Pleistocene times, long before the dawn of civilization. In an age of carnivores the tigers were among the most savage of predatory animals.

SABER-TOOTH TIGERS are regarded by scientists as deserving a rating which would place them among the most ferocious carnivores of all time, though they were not the most powerful. With dagger-like teeth as much as nine inches in length they slashed opponents and prey, presumably subsisting chiefly on the blood of their victims, for their huge fangs must have interfered with the mastication of flesh. Grinding teeth of most of the cats showed little or no wear; another fact pointing to their preference for blood of their victims. Some specimens which had lost or damaged the long, trenchant canine teeth, however, showed evidence of the mastication of flesh by the wear of grit and bone on lesser dentures.







SCULPTURAL FORMS depicting prehistoric monsters which roamed coastal plains of Southern California in Pleistocene times have been erected in Hancock Park beside ancient tarry pits where animals came to drink surface water collected in the pools. Thousands were trapped in the treacherous ooze which has preserved their bones in such perfect state that scientists have been able to recover complete skeletons and reconstruct images of the strange creatures. Carnivores long since extinct preyed on luckless beasts mired in the viscous asphaltum and often fought to the death over such carrion. The preceding color plate and the view above show one of the most striking of the sculptural reproductions, a conception of the massive and ferocious saber-tooth tiger, *Smilodon californicus*. This group was designed by Joseph Roop, who died before his work was completed. Herman T. Beck of the Los Angeles Museum of History, Science and Art finished the tiger group and later executed monumental sculptures of the Great Lion (*Felis atrox*) as well as the Ground Sloths and Great Bear shown on succeeding pages.



GROUND SLOTHS of immense size were among those mammals of a remote age whose skeletal remains have been recovered from the tarry springs of Rancho La Brea. Among prehistoric quadrupeds they ranked next to the elephants in bulkiness but were dim-witted creatures and ill fitted to survive either climatic changes or the fierce competition for existence in an era dominated by carnivores. The sloths were herbivorous animals (*Mylodon harlani*) averaging nine feet in length; many times larger than their arboreal cousins found in the tropics today.



THE GREAT BEAR reconstructed in this massive statue is regarded by naturalists as the largest carnivorous mammal of all time and is represented as having been at least one-third larger than the huge Kodiak bear of the Aleutian Islands. The mammal often is referred to as the short-faced bear. Paleontologists identify the enormous shaggy beast as *Arctotherium californicum*, long extinct. Ninety-one per cent of the Pleistocene mammals comprising the Hancock Collection taken from Rancho La Brea were carnivores.



IMPERIAL ELEPHANTS almost inconceivably massive roamed the coastal plains in past ages. Many were trapped, and left their bones in tarry depths of the asphaltum springs. Above is a model of one of the giants, *Archidiskodon imperator*, created by Charles R. Knight from data in the Hancock Collections. The largest males of the species possessed tusks sixteen feet in length and eight inches in diameter at the base.



FOSSIL EXCAVATIONS on Rancho La Brea during a two-year period in 1913-15 produced a total of 4,264 skeletons identifiable as fossils of Pleistocene mammalia.

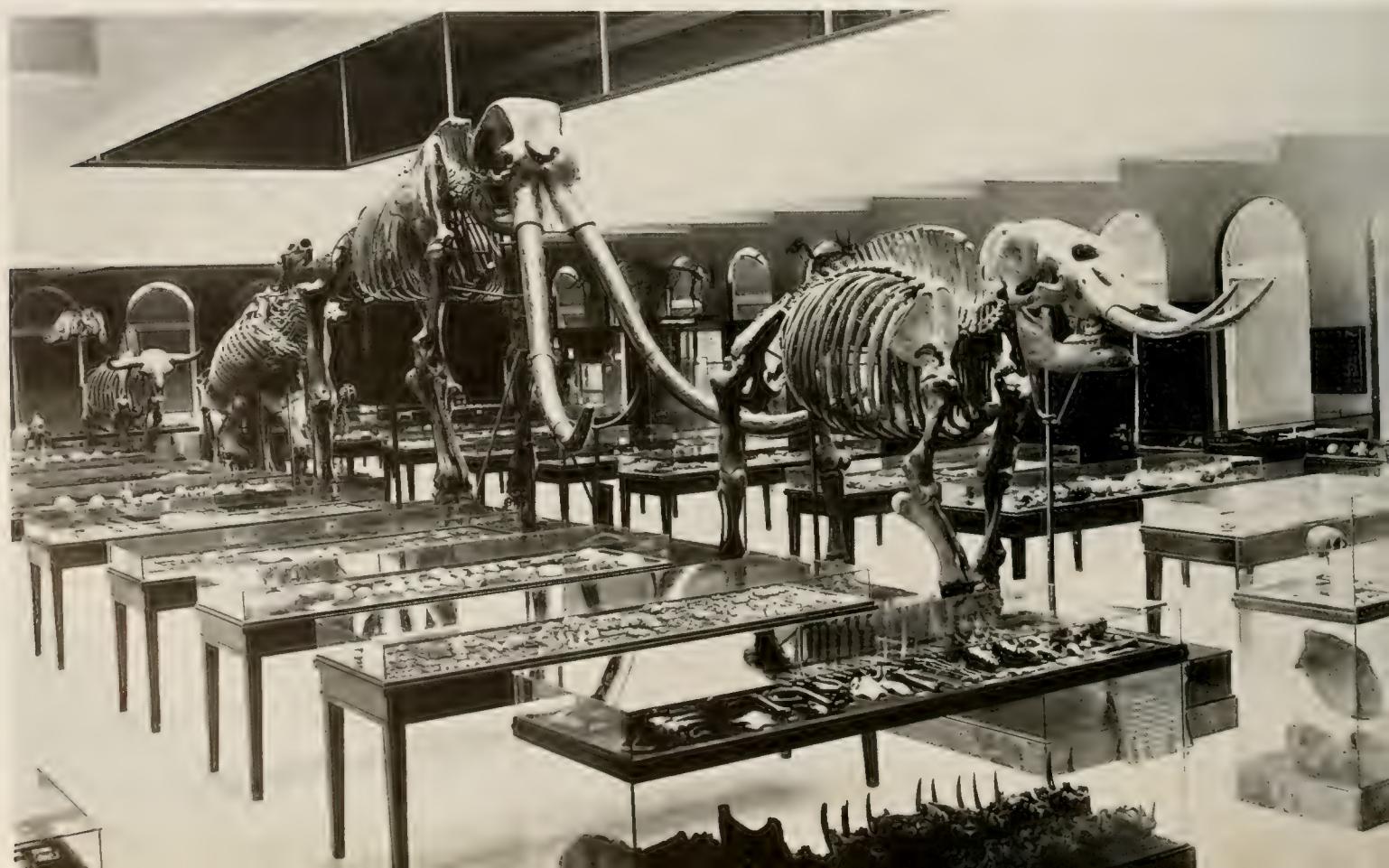


THREE SPECIES of Ground Sloths are known from the fossil finds in Los Angeles, the largest being the *Mylodon*. They had powerful limbs and fearsome claws.

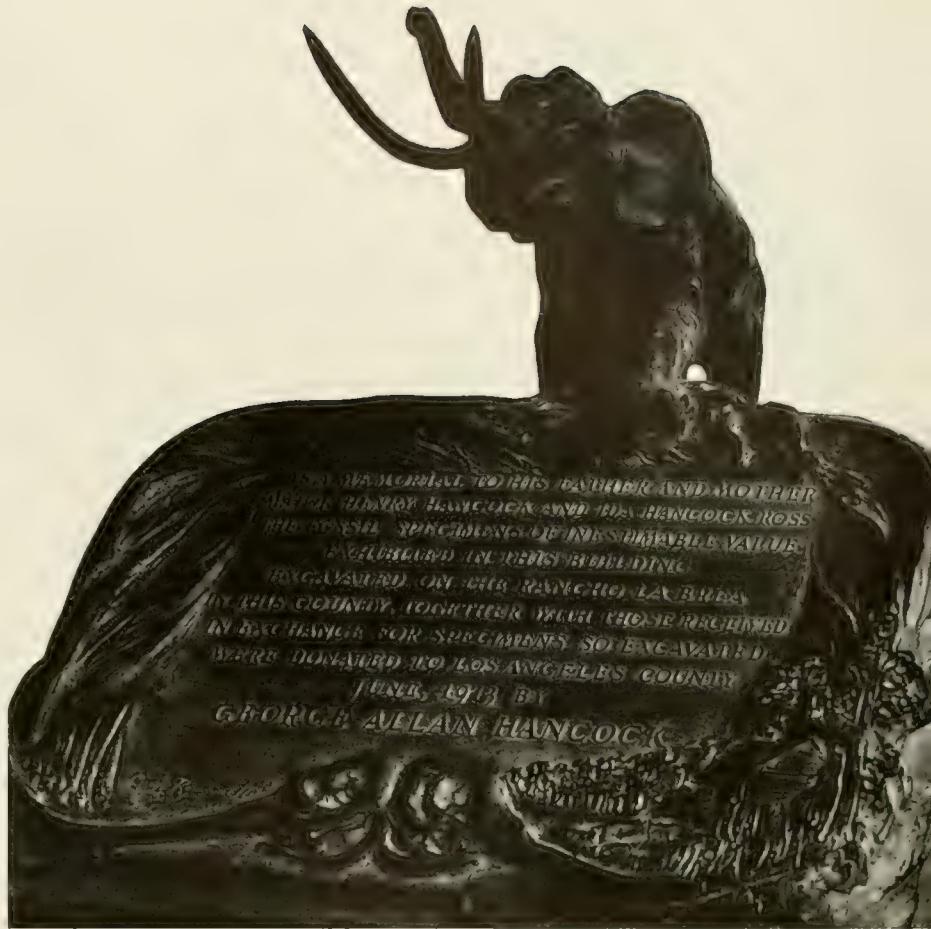


IMMENSE VULTURES long since extinct thrived in southern California during the geologic periods represented by collections from the Rancho La Brea tar traps. Among avian forms was *Teratornis merriami*, a huge condor-like vulture with an estimated wing-spread of 15 to 16 feet. One of the largest known birds of flight, *Teratornis* is compared in the accompanying illustration to the California condor (*Gymnogyps californianus*), as drawn to scale by John L. Ridgway. A raptor with a curious combination of eagle and vulture-like characters, *Teratornis* has proven to be one of the most interesting birds in the Hancock Collections. Skeletal bird elements taken from the tar pits total 4,189 representative individuals. More than a dozen extinct species of birds have been identified from skeletons and there are many others which are extremely rare. Thousands of skeletons of small mammals, such as rodents, insectivores and bats, remain to be studied. The Los Angeles Museum has published numerous papers on the fossil finds.

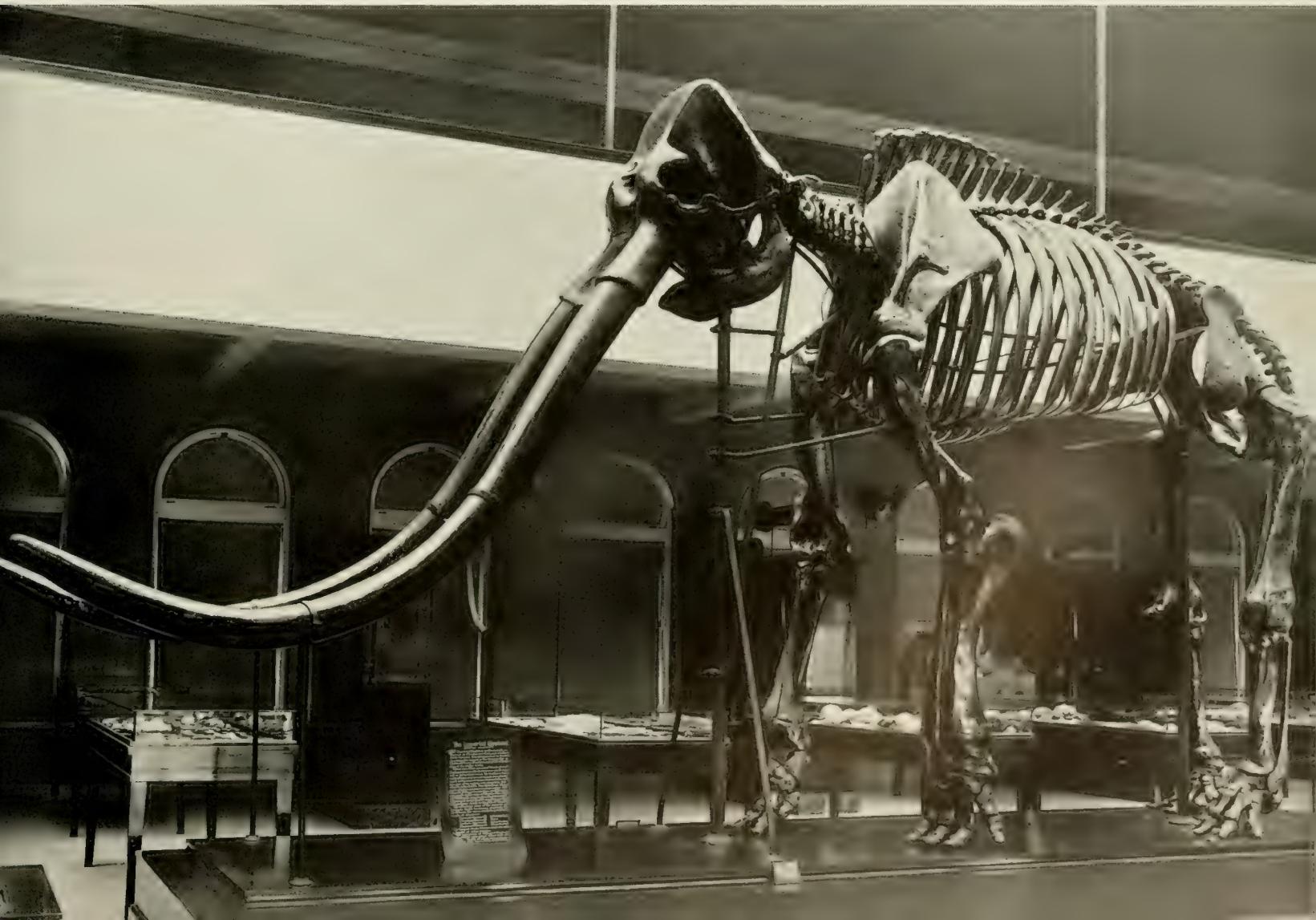
HUGE TUSKERS assembled in awesome array among cases of skeletal elements at the Los Angeles Museum stir the interest of students from all parts of the world.



BRONZE PLAQUE commemorating the gift of fossil treasures to the County of Los Angeles by Captain Hancock in 1913 was designed and executed by Carlo Romanelli, noted Chicago sculptor.

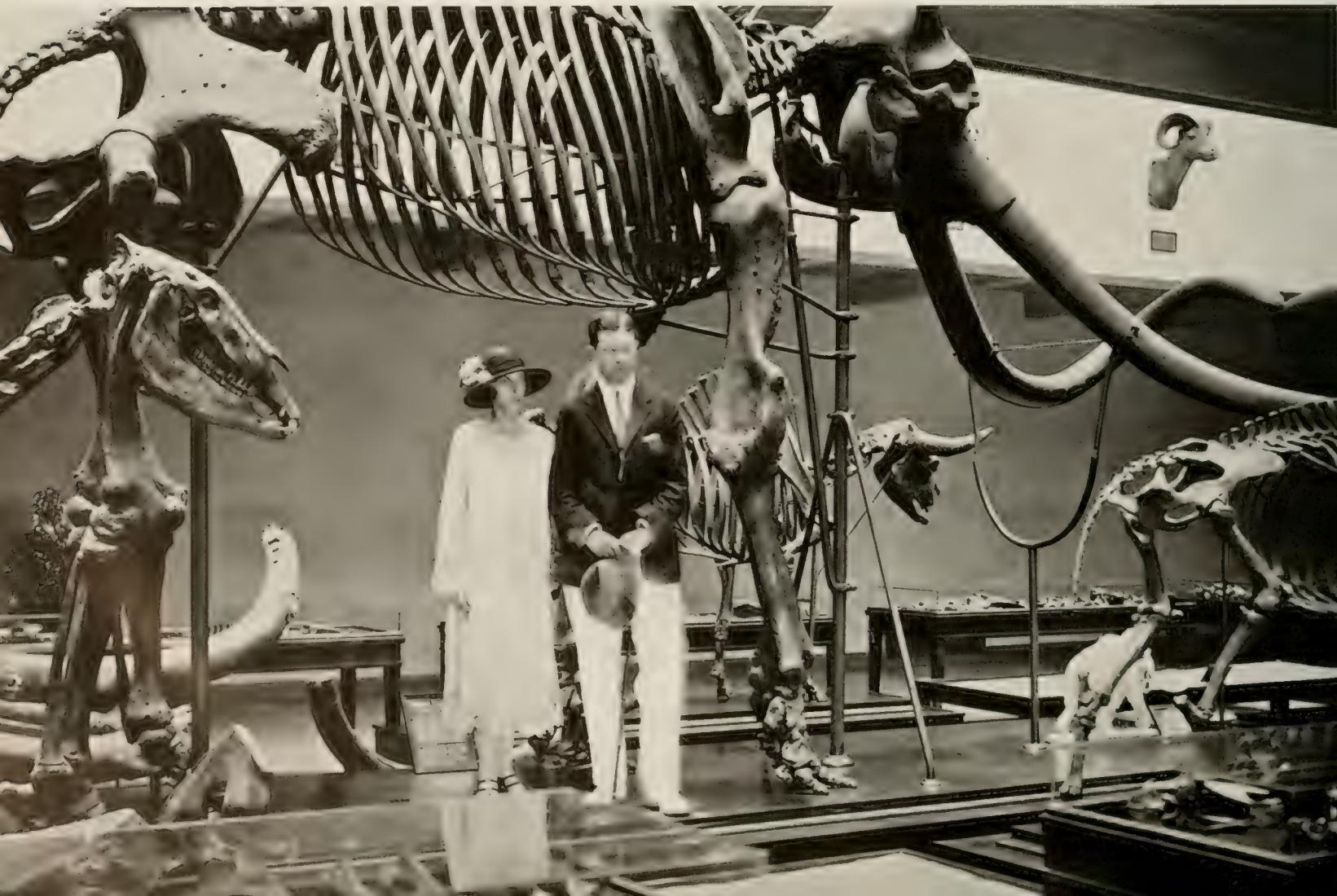


GREATEST MAMMAL of all time which lived on land was this giant herbivore *Archidiskodon imperator*, the Imperial Elephant whose skeleton was recovered by scientists from one of the pits on Rancho La Brea.





COL. THEODORE ROOSEVELT visited the Brea Pits July 26, 1915, and described them as the "most extraordinary storehouse of fossils in the world." About the same time many other notable personages inspected the finds and commented upon their value to scientists in the study of paleontology. In the picture below, Crown Prince Gustaf Adolf of Sweden and his Princess are shown beside a skeleton of the Imperial Elephant on the occasion of their visit to the Los Angeles Museum.





PERSONAGES of international repute are interested visitors to the fossil exhibits at the Los Angeles Museum. On historic occasions civic and museum officials have received notables such as Prince Axel of Denmark (in uniform above); Chief Justice Charles Evans Hughes of the United States Supreme Court and Mrs. Hughes (right above) and Thomas A. Edison and Mrs. Edison at left in the group below. At Mrs. Edison's left is Frank S. Daggett, former director of the museum whose early interest in La Brea Pits was an important factor in the recovery and preservation of the fossil finds. Dr. A. J. Scott, chairman of the 1915 committee which entertained the Edisons, is seen with hat. In recent years the fossil exhibits have attracted increasing attention throughout the world. A large room in the Museum building is called Rancho La Brea Hall and is devoted almost exclusively to skeletal elements and articulated skeletons taken from the tar traps. Under guidance of Dr. John Adams Comstock, director of science, many notable improvements have been made. A summary of Pleistocene life in California by Dr. Chester Stock has been published by the Museum.





WILLIAM HOWARD TAFT, former President of the United States and long a Supreme Court Justice, with group at museum.

PALEONTOLOGIST Henry Anson Wylde recovers skull of extinct Saber-tooth Tiger from asphalt of one of the ancient animal traps.





HANCOCK HOMESTEAD as it appears today
in the heart of Hancock Park, an historic land-
mark beside one of the many ancient tarry
pools which are of intense interest to scientists.

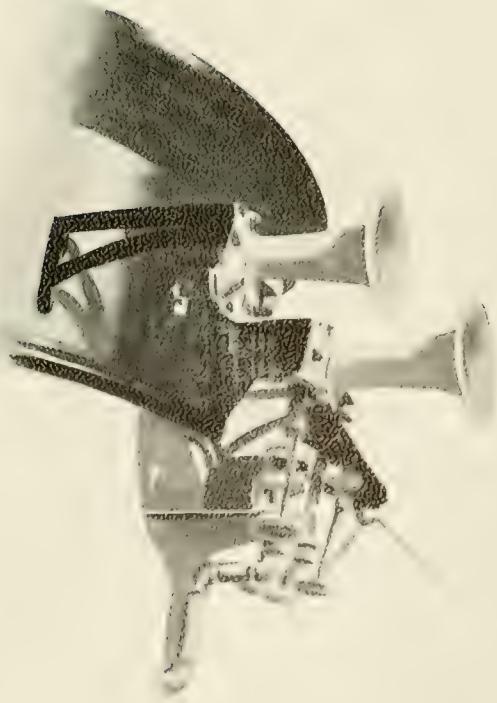


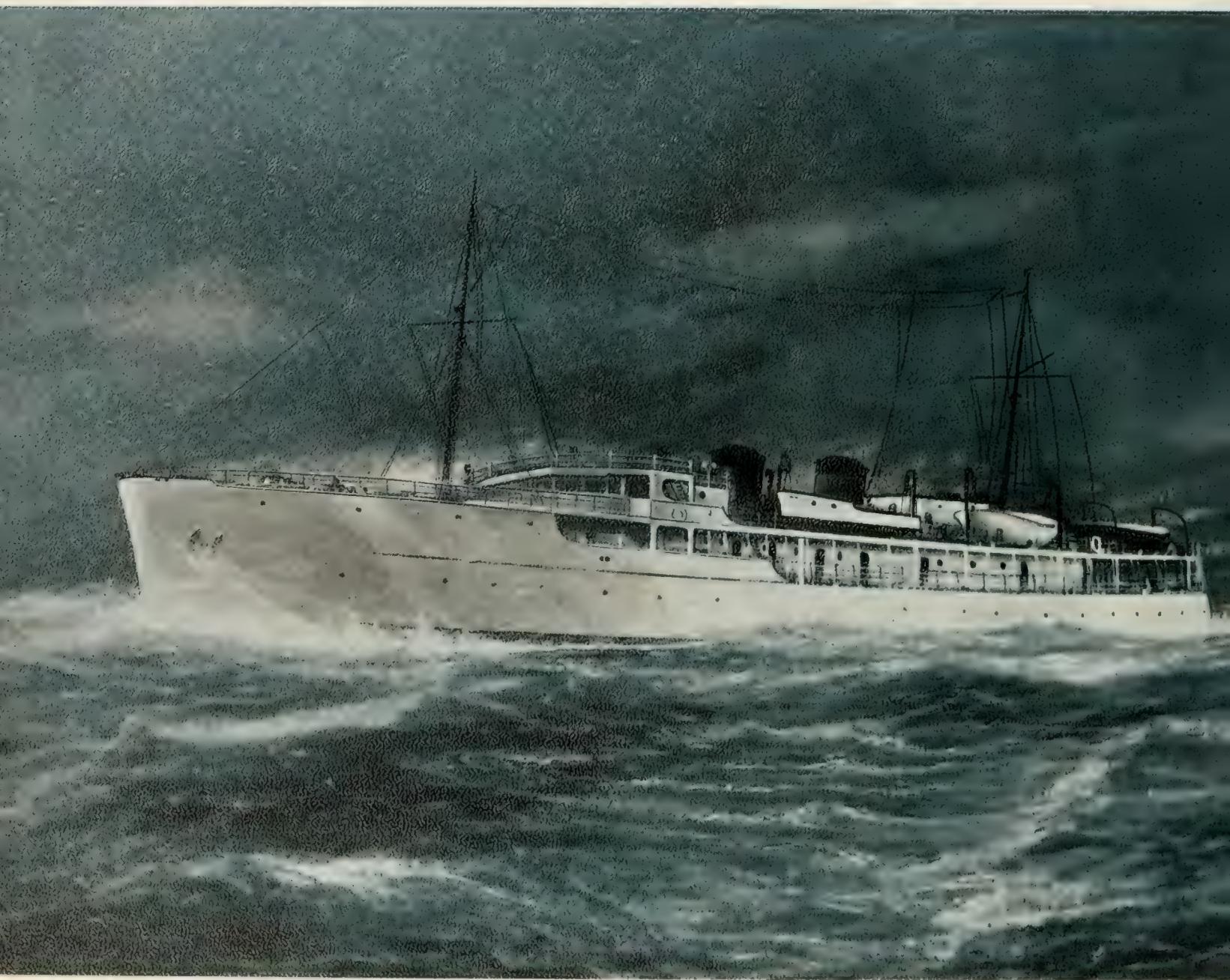


EXPLORING one of the larger pools on Rancho La Brea in his first boat, built about 1890, Captain Hancock and his younger brother find the surface water shallow and the tarry depths treacherous.

VISCOUS ASPHALTUM pool which has been drained of water is shown below as it appears today—gas pressure from subterranean depths forming iridescent globules on the surface, which break and recede slowly in ever-widening concentric circles.







VELERO III

EXPEDITIONS

TO EVERY BOY comes once, at least, the urge to build a boat. Some may be content with the hulk of a flotsam raft. Another's imagination may require more worthy craft.

The feel of a stanch bottom beneath one's feet—a hand on the rudder bar—and the world looks different somehow. Adventure beckons, as always, just beyond the bow.

It was the urge to navigate and explore that prompted Captain Hancock in his youth to launch a sturdy flat-bottomed rowboat which he used to paddle about pools of the old rancho. One could have tossed a stone the length of the largest pool, and it would have been easy to walk around it in much less time than it would take to navigate its breadth.

Yet the boat served well as a medium of exploration which could not have been accomplished in any other way. With it, one could voyage over the depth of the ancient pools where lay the world's finest collection of prehistoric fossil remains, and examine the bubbling, tarry depths which even today provide a phenomenon of interest to all the world.

By prodigious effort, the young explorer could maneuver his vessel over the tricky ooze. Mastery of the humble craft and intent study of the pools stirred in this young man's blood the ambition to visit unknown shores and pursue fleeting horizons in search of knowledge—factors which always have lured those of pioneering spirit.

The cruiser Velero III had its beginning in that broad-beamed square-ended boat which still rests intact beside the weathered old ranch house in Hancock Park where Captain Hancock spent his youth. Its planking soaked in crude oil and smeared with tarry brea through long years of usage on the pools, the craft may last another half century or more, for it seems immune to weathering. It remains a symbol of youthful ambition.

In those early days when Los Angeles Harbor was mostly mud flats and Santa Catalina was an aloof, barren island, the young pioneer was able to expand his horizons and learned to navigate his own craft beyond the sight of land.

Not content to do things half way, the young man went to sea and worked on ships, studying navigation in the most intensive and practical way until he had earned and received his master's

papers, authorizing him to navigate ships of any tonnage on any ocean. Acquisition of this knowledge entailed assignments on merchant ships, and afterward he engaged in marine commerce as master and owner.

Always there was the urge to navigate uncharted waters and explore little known lands in the interest of science. Moreover there was an intense desire to design and construct a vessel most practical for long range work.

There came a succession of boats—the Cricket, Velero I, Velero II, Oaxaca, and finally the Velero III. Each was an improvement on the other and each embodied innovations in ship building which often startled shipwrights but proved a credit to the owner. Velero is translated to mean "swift sailing vessel."

To build a better boat was not in itself sufficient objective. Each had to serve a definite purpose. The Velero III evolved as the last word in a vessel designed and built specifically as a medium for scientists to scan new frontiers for knowledge. From the moment of its launching it was dedicated to the advancement of marine science and related branches of biology.

Personnel for each expedition is important. Every man is chosen with care. Invariably the personnel includes leaders and experts in related scientific fields and those experienced in the work of the expeditions whose worth has been proven. Institutions represented on many of the cruises include the United States National Museum, University of Michigan, University of Southern California, Steinhart Aquarium, California Academy of Sciences, University of British Columbia, and the San Diego Zoological Society.

An unrivaled collection of marine specimens taken from the eastern Pacific Ocean and the west coasts of the Americas by the expeditions has been carefully preserved for the benefit of scientific and educational institutions. A great portion of the material has been concentrated at the University of Southern California in Los Angeles where students from all parts of the world have access to the collections. The increasing volume of specimens retrieved and the expansion of study involved impressed upon Captain Hancock the necessity of establishing a foundation through which yields of the voyages of the Velero III might be studied more intensively and the work of exploration be assured of perpetuation.



STEAMSHIP OAXACA played a prominent part in Captain Hancock's career as business man, navigator and explorer. She was one of the famous mystery ships constructed by the British Admiralty during the World War a cargo carrier and camouflaged submarine fighter of unusual power and speed. Rebuilt and air-conditioned by Captain Hancock, she served to transport products of his Hacienda Barron, near Mazatlán, Mexico, to market. For two years he lived aboard her and in off seasons conducted one scientific expedition to the Galápagos Archipelago and another to Alaska. Due to faulty channel markings she went aground on Burnt Island Reef in Wrangel Narrows with the pilot, Captain Morehouse, on the bridge. All on board were safe. Later the vessel was salvaged and sold. The reproduction above is from an old photograph.





THE CRICKET



THE VELERO I





LAUNCHING of the *Velero III* at the Craig Shipbuilding yards in Long Beach on April 2, 1931, was an event which portended much for the future of marine science. Because of her novel design and extraordinary equipment she attracted the attention of marine engineers throughout the world.



GATHERING her brood of auxiliary craft as storm clouds billow over rain forests bordering Port Utria, Colombia, the *Velero II* is shown bow-on with boat boom and davits extended. Tropical rains rarely interfere with work of the expeditions.

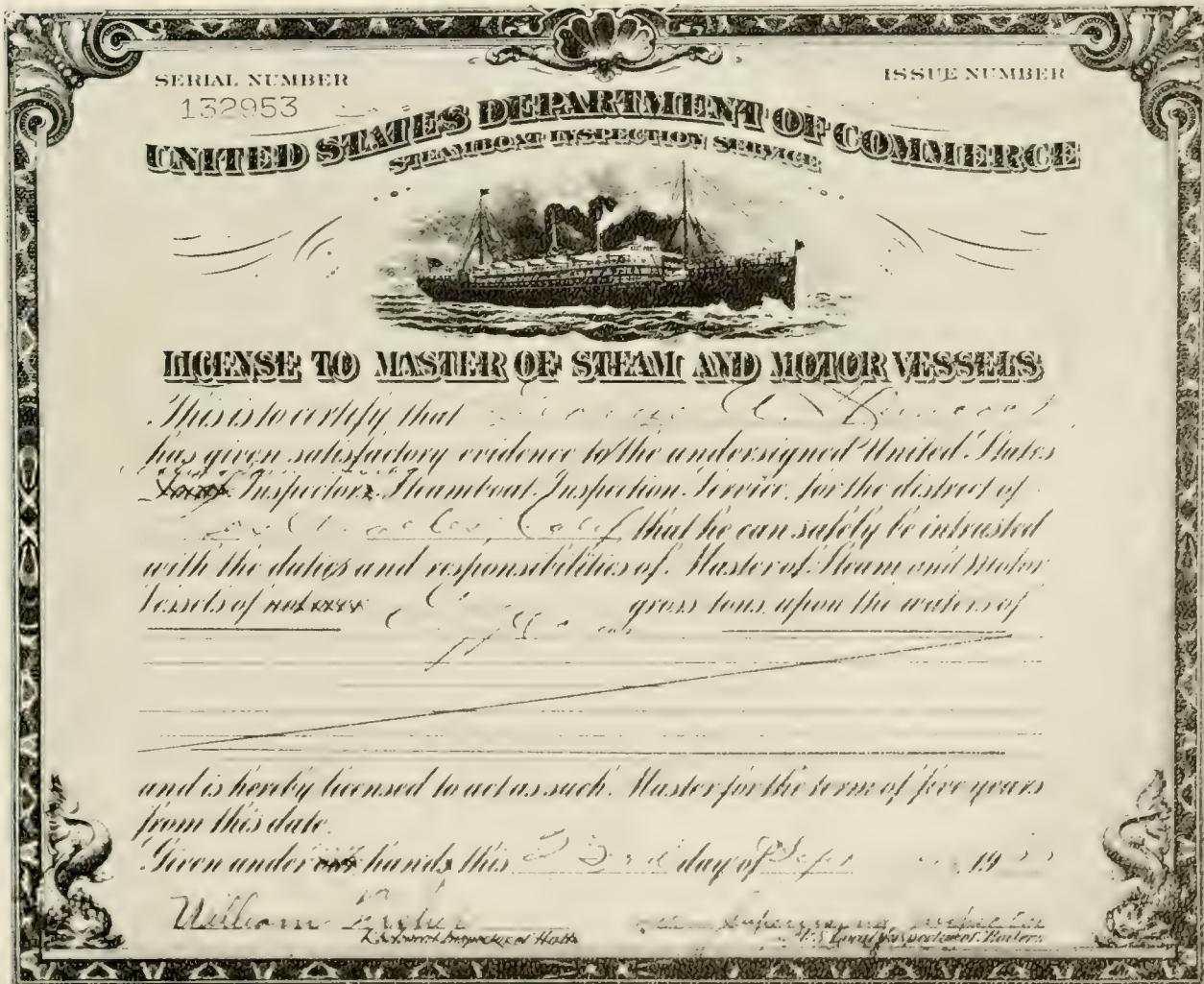


BRIDGE of the Velero III showing some of the numerous navigational aids and ship controls, including radio beam direction finder, gyro-pilot control tower, compasses, and engine telegraph control head.



CAPTAIN HANCOCK
on bridge of Velero
shooting sun with
sextant.

MASTER'S LICENSE earned by Captain Hancock after years of patient study and practical navigation entitles him to master vessels of any tonnage on any ocean.



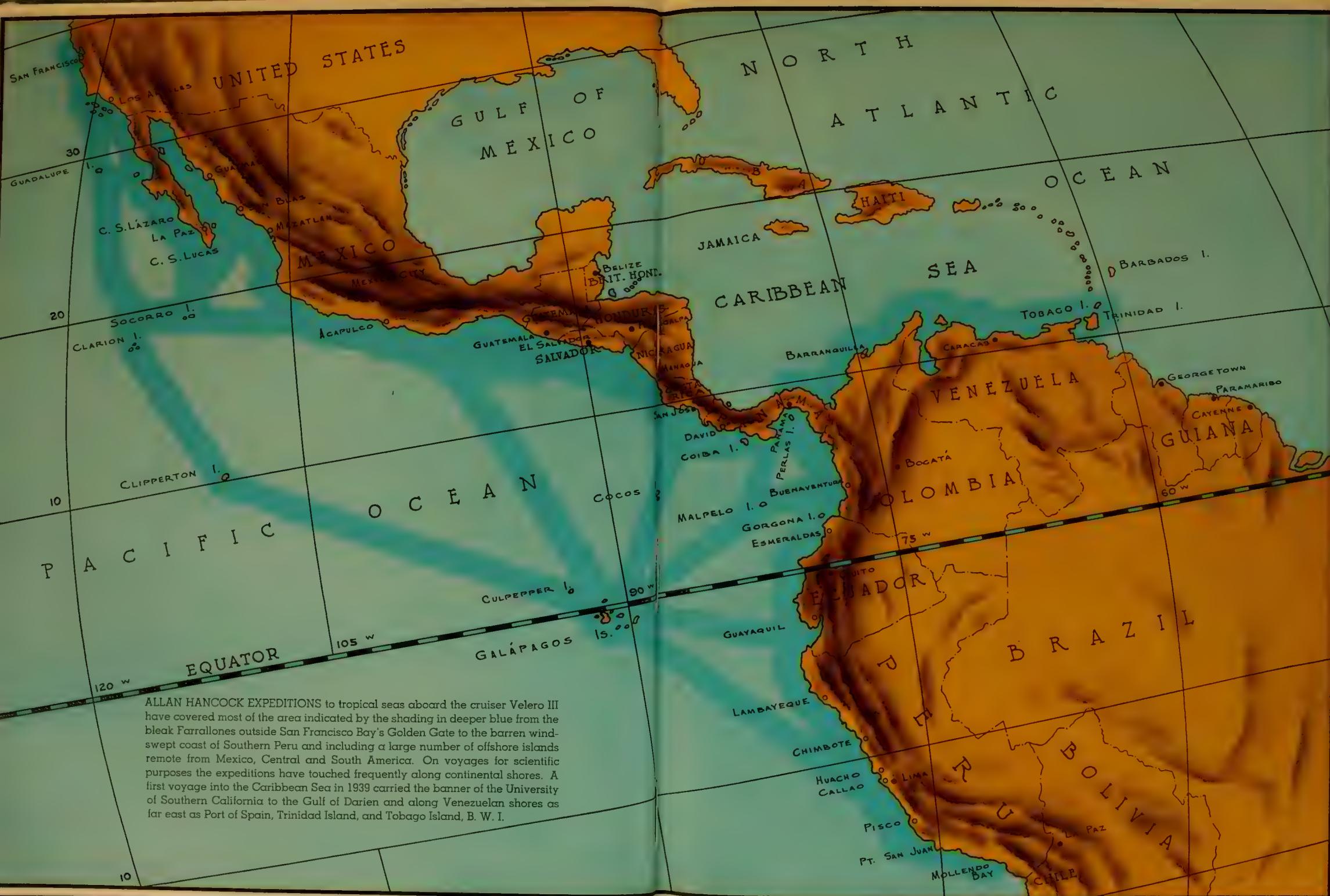




CHART ROOM of the Velero III is fully equipped with latest navigational devices known to the science of the sea and embodies many special safety features which may be found aboard the largest ocean liners.



RADIO ROOM of the Velero III is adequately equipped for both long and short wave communication with a range equal to any emergency in the most remote areas of the Pacific Ocean. Standby equipment is another safety factor.



SLEEK LINES of the Velero III are best observed as she rests on the ways in dry dock at Long Beach, receiving a thorough cleaning and painting before her 1939 cruise to the Caribbean Sea. She is a steel-hulled craft.



DECK CARGO of live birds, animals, reptiles and fishes give the vessel a Noah's Ark appearance as she docks in the basin at Balboa, Canal Zone, on a return voyage from tropical waters. Specimens are protected from the sun by tarpaulins



ANNOUNCEMENT of the gift of the Velero III to the University of Southern California as a floating laboratory dedicated to the advancement of marine science was made on January 8, 1939. Above the famed craft is shown at anchor in calm waters of Port Utria, Colombia, on her last voyage under the Hancock house flag. She now flies the banner of U.S.C.





ALLAN HANCOCK FOUNDATION for SCIENTIFIC RESEARCH.
Northwest elevation of Foundation building on campus of the
University of Southern California, facing Student Union Build-
ing and the Doheny Memorial Library.

FOUNDATION

P

ROVIDING a west coast center for intensive biological research, especially in the fields of marine zoology and botany, the Allan Hancock Foundation for Scientific Research on the campus of the University of Southern California in Los Angeles embodies a new departure in academic endeavor.

Inseparably linked with the Foundation is the famed exploration cruiser *Velero III* which was presented to the University by Captain Hancock as a companion gift. Provision is made for continued operation of the vessel.

Pioneering voyages of the *Velero III* which extended over a large portion of the eastern Pacific Ocean made possible the accumulation of a vast amount of data and the collection of thousands of valuable scientific specimens. This material in turn made practical the establishment of the Foundation which is intended to perpetuate the work.

Projected voyages of the *Velero III* will continue the supply of data and materials to the institution and research within the Foundation is expected to guide future exploration of the vessel so that the shoreside and floating laboratories may work in closest harmony toward the advancement of marine science.

Cooperation with outstanding scientific institutions has been the creed of Captain Hancock since he first visualized the value of the work. The Foundation will afford scientists exceptional opportunities to add to man's store of knowledge.

The Foundation building, designed to cover the major portion of a square in the central area of the University campus rises three stories above ground level and harmonizes with other architectural renderings on the grounds. It includes an adequate number of experimental laboratories; classroom laboratories; lecture halls and numerous other features inspired by the most modern methods of practical and visual instruction.

In the design and construction of the building special precautions were taken to make certain that the thousands of prized specimens collected would be properly preserved. Six levels of reinforced concrete stacks designed for dry and humid storage of specimens are provided in the building. There are adequate facilities for simulating the varied conditions under which marine animals and plants exist in nature.

Educational dioramas depicting natural habitats of birds, animals and reptiles supplement museum exhibits of marine life. There is a large lecture hall equipped for the presentation of educational motion pictures, musical concerts, the recording and reproduction of sound and public address. This section includes offices, a motion picture library of the Hancock expeditions, film cutting and editing rooms, photographic and X-ray dark rooms and other technical facilities.

A part of the institution is devoted wholly to cultural projects linked with a visual education extension service. Provision has been made for a shrine of classical music. From the former Hancock home at Wilshire Boulevard and Vermont Avenue four rooms were moved intact to the campus and restored as a nucleus of art.

Patterned after the famed Villa Medici in Florence, an historic structure of the Italian Renaissance, the home was a landmark in Los Angeles for more than a quarter of a century. It was the creation of Madam Ida Hancock-Ross, whose fine cultural background found expression in channels of good music and constructive philanthropy during the last decade of her full life.

Traveling much abroad, she searched Europe for authentic art treasures which were added in modest good taste to the furnishings of the home. From the finest collections in Italy she selected a series of marble busts of the great composers. With paintings, tapestries, fine wood carvings and a pipe organ these objects of art contributed to the fifteenth century feeling of the music room. She made of it a veritable shrine of music. As a memorial to her devotion to the great classics, the suite of rooms has been restored as a part of the Foundation building to serve again as a rendezvous of artists. Likewise the Allan Hancock Ensemble becomes an added cultural asset of the university.

Modern art also plays a striking part in the design of the new Foundation building. Sculptural decorations in realistic relief modeling have been rendered by Merrell Gage, celebrated sculptor and professor of fine arts at the University of Southern California. Subjects are scientifically important zoological and botanical specimens. An immense prehistoric animal group forms a panel on the north wing. Fifty-nine smaller panels decorate parapet walls, the main entrance and the auditorium.



ALLAN HANCOCK FOUNDATION for SCIENTIFIC RESEARCH.
View of Foundation Building showing east entrance which
faces the Town and Gown and Elizabeth von KleinSmid Hall



IN RECOGNITION of his stewardship in business and his efforts toward advancement of science and education Captain Hancock was elected to serve as President of the Board of Trustees of the University of Southern California. In the accompanying photograph academic honors are conferred by the University of Southern California as Dr. Rufus B. von KleinSmid awards the degree of Doctor of Business Administration.



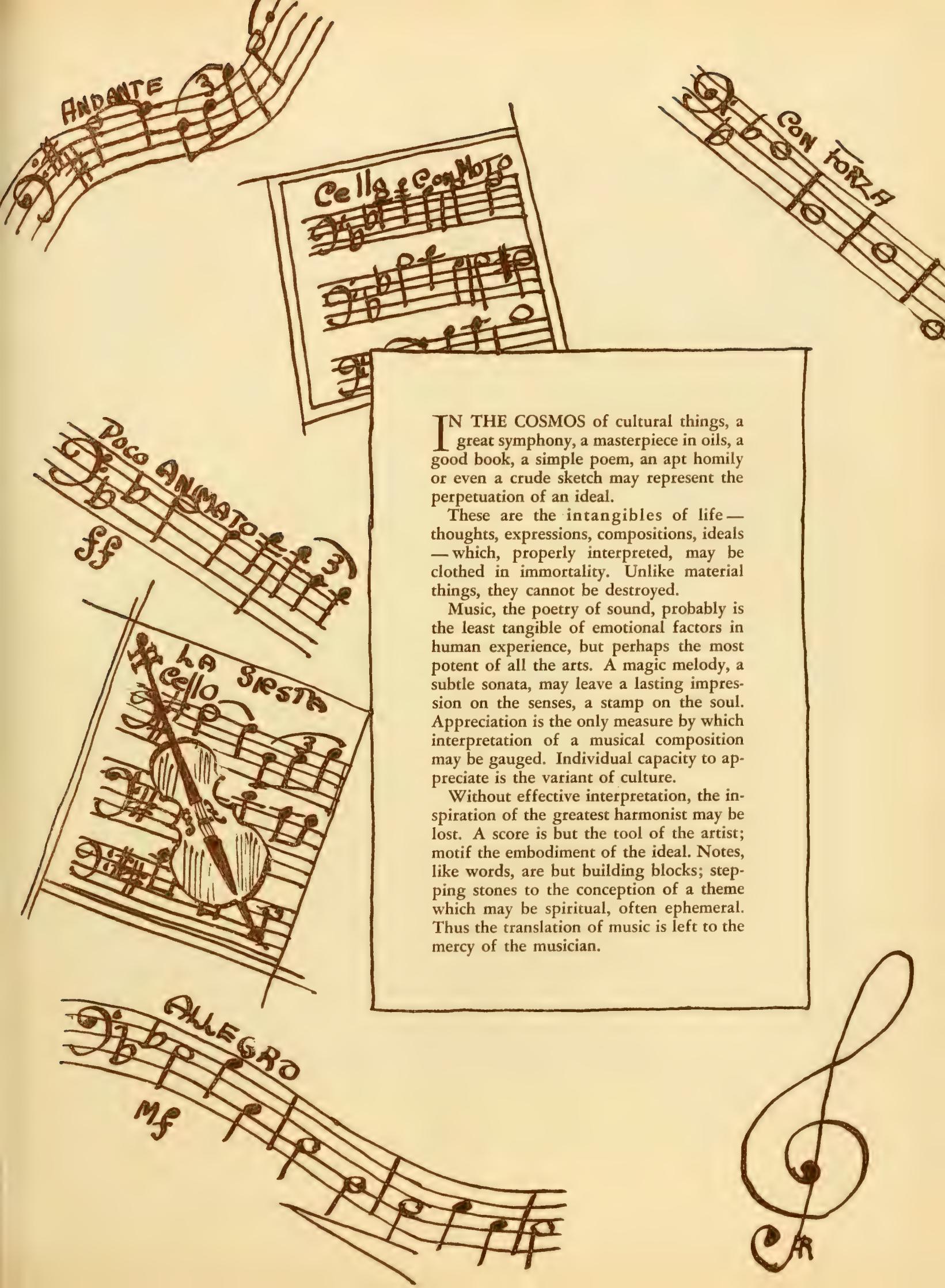
FORMER HANCOCK HOME patterned after the famed Villa Medici in Florence, Italy. When the residence was razed four rooms were moved intact to the campus of the University of Southern California, there to be restored as a nucleus of art in the Allan Hancock Foundation for Scientific Research



ITALIAN MARBLE staircase from former Hancock home which has been incorporated in one wing of new Foundation building at U.S.C.



MUSIC ROOM foyer and rare objects of art expressive of Italian Renaissance which have been restored and preserved as nucleus of art.



IN THE COSMOS of cultural things, a great symphony, a masterpiece in oils, a good book, a simple poem, an apt homily or even a crude sketch may represent the perpetuation of an ideal.

These are the intangibles of life — thoughts, expressions, compositions, ideals — which, properly interpreted, may be clothed in immortality. Unlike material things, they cannot be destroyed.

Music, the poetry of sound, probably is the least tangible of emotional factors in human experience, but perhaps the most potent of all the arts. A magic melody, a subtle sonata, may leave a lasting impression on the senses, a stamp on the soul. Appreciation is the only measure by which interpretation of a musical composition may be gauged. Individual capacity to appreciate is the variant of culture.

Without effective interpretation, the inspiration of the greatest harmonist may be lost. A score is but the tool of the artist; motif the embodiment of the ideal. Notes, like words, are but building blocks; stepping stones to the conception of a theme which may be spiritual, often ephemeral. Thus the translation of music is left to the mercy of the musician.

MUSIC

IN THE INTERPRETATION of some of the finer classics of the world's greatest composers, the Allan Hancock Ensemble has won international recognition. An organization founded upon an ideal, this musical group has not stopped short of mastery of any task undertaken.

Few artists have practiced more earnestly to improve technique and to secure fidelity of interpretation. Their zeal mirrors the character of the man who founded the ensemble and has fostered its work. In every project he has undertaken, Captain Hancock has himself worked tirelessly to achieve maximum results. In music, anything less than the best has not been good enough.

Beneath the towering blue gum trees on old Rancho La Brea where he spent most of his youth, he used to sit in the shade and play on a little twenty-five cent harmonica. From the reed mouth organ he turned to the silvery-toned cornet. Finally he chose the 'cello and studied under some of the best teachers in the west.

Captain Hancock's mother remembered his talent for music when she searched Europe for art treasures. She brought home a fine violoncello. The gift inspired more serious musical study. Persistent practice was more pure enjoyment and recreation than a chore. He often joined local orchestras, playing at dances and in concerts, for practice. As he acquired greater skill, he was invited to play with the Los Angeles Symphony Orchestra, the Philharmonic Orchestra and in Hollywood Bowl. He was privileged to play under some of the world's greatest symphonic conductors.

A natural preference for the smaller, more intimate musical group, caused him to settle some years ago upon an ensemble of eight. The ensemble contributed a long series of radio broadcasts to the air waves over nationwide networks during past seasons and has been called upon repeatedly to enlarge the scope of its presentations. At times the concerts have been broadcast over as many as seventy-two major stations simultaneously, and on occasion they have been rebroadcast over foreign stations.

The ensemble has played to hundreds of audiences in schools, clubs and churches throughout California, sometimes appearing as often as five times a week. Concerts always are open to the public. Captain Hancock never has permitted commercialization of his musical avocation.



CAPTAIN ALLAN HANCOCK plays a famous cello created by
Nicolaus Gagliano in 1763



MUSICAL ENSEMBLE of recent years as it appeared with pipe organ background in music room of the former Hancock home.



ALLAN HANCOCK ENSEMBLE of 1939 as the artists played one of many concerts in connection with the showing of educational motion pictures obtained on voyages of exploration aboard the cruiser *Velero III*.



ROSEMARY FARM in the heart of the Santa Maria Valley symbolizes another of the major activities of Captain Hancock. Development of the rancho stimulated scientific farming in the broad and fertile valley to which earliest Spanish explorers were attracted. Above is the entrance gate to the farm.

SANTA MARIA

A

GRICULTURAL enterprise in the career of Captain Hancock bears the stamp of his pioneer heritage. Like his parents and grandparents, he long harbored a love for the soil. In his youth he learned to follow the plow on historic Rancho La Brea. In one way or another he has kept at it ever since.

Rancho La Brea was all but engulfed by the phenomenal growth of Los Angeles and Hollywood during the first two decades of the century. Its rolling plain became the site of fine residential sections. Its dusty lanes became great business thoroughfares. Towering office buildings line boulevards which once were mere trails bordered by wild mustard. Nowhere else in the world has the transition from virgin soil to a teeming metropolis been so rapid.

More than two thousand acres of choice ranch lands were enveloped by the city and Captain Hancock began to cast about, more or less, for elbow room; for other suitable soil which he might develop. He found it in the Santa Maria Valley, seventy-five miles north of Santa Barbara. There he has developed Rosemary Farm and La Brea Rancho, helping to create a center of agriculture which has come to be known as "The Valley of Gardens."

Glowing accounts of the fertility of the soil and abundance of life in the Santa Maria Valley illuminate the writings of early explorers. Sebastián Viscaino paid such high tribute to the valley that he may well be suspected of some exaggeration. But historians of Gaspar de Portolá's expeditions were hardly less enthusiastic. From the diary of Padre Crespi and the notes of Portolá's recorder, Miguel Constanso, one gathers the impression that native Chumash Indians were enriched by productivity of the soil and had developed the highest culture known among coastal tribes.

Historians picture the Chumash as living in the midst of plenty and sharing nature's bounty with numerous deities through sacrificial ceremonies romantically colorful and often fantastic. Inscribing ecstatic accounts of the richness of the valley, explorers attribute the peaceful hospitality of the tribe to inherent contentment.

White men came and went in hordes along El Camino Real during the excitement of the gold rush beginning in 1849, but it was not until 1867 that the first white settler sunk his stakes in the soil of Santa Maria. A townsite was laid out in 1875 and was

at first called Central City. In the following year Santa Maria was adopted as the name of the townsite as well as the valley. Probably it was Father Crespi who originated the name. Constanso mentions that the place was christened in honor of an Indian chief, but it seems highly improbable that the devout would invest an aborigine with any such saintly sobriquet.

In the early days cattle raising was the principal industry of the valley, which came to be known as a "Cow Heaven." Dry farmers found that wheat, barley, oats, corn, and beans did well. Home gardens produced vegetables of remarkable quality. A sugar beet industry sprang up, but probably was overdone. For fifty years after the first straggling settlers began their battle of toil the valley basked in an equable climate, and made commendable but unexciting progress. Suddenly in 1925 it came to life.

Captain Hancock went to the valley with vision and a purpose, rolled up his sleeves and went to work. Here were agricultural and industrial possibilities which challenged his pioneering spirit. From an English syndicate he took over twenty-six miles of rusty and bedraggled railroad line and equipment, along with a group of oil wells and storage tanks at the upper end of the valley. The Santa Maria Valley Railroad was more of a liability than an asset, but it figured in his long range plan for development of the valley, scientifically and commercially. He acquired farm lands and grazing lands and began building for the future. His energies were devoted to stimulating production and orderly marketing in the valley.

Engaging agricultural advisors, trained poultrymen, and qualified herdsmen for Rosemary Farm, he inaugurated a system of crop rotation to restore the fertility of overworked soil and soon demonstrated the value of scientific farming. He established an ice plant of ample capacity and organized a packing company which afforded growers a satisfactory market for their products.

Irrigation made possible the growing of crops previously untried in the valley and ranchers supplemented grain and bean crops with vegetables. Carrots, lettuce, cauliflower, endive, broccoli, tomatoes, cabbage and a host of other garden products flowed out of the valley to the great markets of the nation where they have gained the reputation of possessing exceptional quality.



IRRIGATION proved its worth to ranchers of the Santa Maria Valley after Captain Hancock demonstrated the most modern and practical methods of producing fresh vegetables for the markets of the country. Scenes on this and succeeding pages are typical of Rosemary Farm where crop rotation is a paramount consideration. Lettuce, carrots, tomatoes, endive, cauliflower, broccoli, peas, beans, corn, barley and a host of other products are grown in quantity for direct shipment by rail.









ROSEMARY FARM, as seen from the air, creates an impression of intense activity. Headquarters of the ranch and a part of the great battery of poultry houses are shown in the center of scientifically cultivated vegetable gardens and forage fields. More than 50,000 fowls may occupy the laying pens of the poultry batteries at the peak of a season. Eggs and dressed poultry are marketed throughout the nation. The Santa Maria Valley Railroad runs through the center of the farm. The agricultural department, north of the railroad, is out of the picture. Scenes on the opposite page are typical of the bean harvesting season. While the photographs are representative of scientific farming in the Santa Maria Valley, the principal industry is the growing of fresh vegetables



SANTA MARIA AWAKENED to new opportunities as agricultural production stepped up and local business improved. Within five years the population of Santa Maria doubled and there has been consistent, steady growth throughout the valley since. In 1924, before Captain Hancock arrived, only 68 railway car-loads of fresh vegetables were shipped out of the entire valley. In 1925 outbound carloadings totaled 1,427. By 1930 outbound carloadings reached 6,600 and the total of inbound and outbound freight reached a peak of 11,240 car-loads. In May, 1927, the Santa Maria Valley originated more shipments of fresh vegetables than any other point in the United States. Freight traffic has held up consistently around 10,000 cars a year and general offices of the Santa Maria Valley Railroad, shown above, are the hub of activity. It is a broad-gauge line which connects with the Southern Pacific coast line at Guadalupe. Santa Maria has come to be known as "The Valley of Gardens." The valley is approximately 30 miles in length, its westerly end opening upon the blue Pacific. Santa Maria is $\frac{1}{2}$ miles north of Santa Barbara.



ROLLING STOCK of the Santa Maria Valley Railroad is kept in the finest condition, for the line has its own railway shops. Captain Hancock is a qualified locomotive engineer and is shown at the throttle of one of the locomotives on a good-will trip to Santa Barbara.



LONG STRINGS of tank cars thread their way through the Santa Maria Valley from Roadamite to Guadalupe carrying the output of wells producing a heavy petroleum which is more than 90 per cent asphaltum and is widely used for highway surfacing.



PACKING SHEDS of the Rosemary Packing Company are patterned after the most modern and efficient in the Southland. They are operated in conjunction with the Santa Maria Ice and Cold Storage plant so that shipments are handled with the greatest possible dispatch and safety. The tramway for icing railway cars, with cakes of ice in position, may be seen on the edge of loading platforms, beside strings of refrigerator cars waiting to receive choice products of valley farms.



FIELD-GROWN vegetables from Rosemary Farm may be picked, washed, packed, iced, and shipped within the short space of a few hours and start on their way to markets in perfect condition. This is why vegetables from the Valley of Gardens are so popular among eastern consumers. Above is a view in the packing shed showing endive iced in paper-lined crates ready for loading in a railway car just outside the door. Crushed ice is blown over the top of the carload with equipment shown in the photograph below. Careful packing makes it possible for Santa Maria Valley growers to obtain premium prices on many products and to compete favorably in distant markets





AERIAL NAVIGATION being the exact science that it is, it naturally holds an unusual fascination for Captain Hancock who was scientifically inclined from his youth. Over a period of many years, in his quiet way, he has contributed much to the progress of aviation and is an active pilot. Symbolic of his patriotic interest in aviation is this view of an engine nacelle on the Lockheed-14 transport which he flies.



FLYING ENTHUSIASM was stirred to new heights when the tri-motored Southern Cross was flown through California's Golden Gate across the turbulent Pacific to Australia in 1928. Few persons knew that Capt. Hancock had befriended her brave commander, Sir Charles Kingsford-Smith, and made possible that epochal flight. The two men who contributed much to the progress of aviation are shown above at the rail of the Velero III when Sir Charles again visited America after pioneering South Pacific airways. Before the history-making flight Captain Hancock made a detailed study of the problems involved and observed the character of the men. He took Sir Charles and Captain Charles T. P. Ulm on a voyage to Mexico aboard the S.S. Oaxaca. Satisfied as to their ability, he quietly went into action and provided all that was needed for the flight. Later he made a gift of the plane to her doughty commander. It was about this time that Captain Hancock determined upon a plan to make it possible for young men to secure thorough training in aviation at minimum cost. Having extensive interests in the Santa Maria Valley, he established an airport on the outskirts of the city and soon afterward launched the Allan Hancock College of Aeronautics. The school started a large number of well-trained men on successful careers in aviation. During the business recession there was a period of inactivity in the industry and operations of the college were curtailed. As the demand for trained men grew the flying school was revived on a larger scale early in 1938. When expansion of the air force was ordered by the War Department as a vital factor in the national defense the Allan Hancock College of Aeronautics was ready and able to cooperate. In July, 1939, a contract with the United States of America was entered into providing for elementary training of Flying Cadets for the Air Corps, United States Army. The Santa Maria Airport was enlarged auxiliary flying fields were secured and adequate new buildings were erected. The training program has been carried forward successfully and to the satisfaction of the Air Corps.





FLYING CADETS of the first class assigned to Allan Hancock College of Aeronautics under the Air Corps expansion program are shown above with instructors and Army inspectors. Training scenes appear opposite.



NEW BUILDING at east end of hangar line provides administration offices, classrooms (below) and modern quarters for Cadets. Near center of line are new mess hall and immense new hangar. Santa Maria Airport is fully equipped and is an official off-airways meteorological station of the Civil Aeronautics Authority.



FUTURE PILOTS of the Air Corps, United States Army, are shown below in their snappy gray-blue uniforms and on opposite page in flying regalia. Graduates are advanced to Randolph Field, San Antonio, Texas.





HIGH STANDARDS of training and equipment promote efficiency at 'America's Air Academy.' Above is a corner of the main dining room.

TWIN TRANSPORTS of the Allan Hancock College of Aeronautics fly in formation over the upper end of the Santa Maria valley.





A VETERAN PILOT of nearly 2000 hours at the controls, Captain Hancock is shown above with his Co-pilot, W. J. (Pat) Fleming, about to depart from Union Air Terminal, Burbank, in the Lockheed 14. The transport is equipped with the most advanced aids to aerial navigation

SANTA MARIA AIRPORT is ideally located for year 'round flying. Wind and weather are favorable. The valley is broad and flat. Approaches are clear and ample runways on all points of the compass provide safe landing space for even the largest aircraft. Auxiliary fields are used in student training operations.





SPARKLING WAKE of the *Velero III* under way is suggestive of vigorous action which is the creed of Captain Hancock. He displays little interest in passive occupations or avocations and has been a moving force in projects of science, industry and the arts which call for alertness and strenuous activity. On voyages of the *Velero III* many leading scientists of the country have been privileged to visit some of the most remote areas of the eastern Pacific Ocean and the Caribbean Sea, each doing his bit to increase the knowledge of mankind

AUXILIARY

THE BLAST of a whistle from the bridge of the Velero re-echoes along rock-bound shores of Gorgona Island off the coast of Colombia and diminishing waves of sound seem to rustle softly through palm fronds and lush tropical growth which drapes the hills and frames her shallow beaches in numerous shades of green.

Two miles to leeward a motor launch comes about and heads bow up for the anchorage. Her twin, another motor launch, idles a bit, gears humming a merry tune as a drum astern hauls in a length of cable to which a deep sea dredge is attached. Scientists aboard dump contents of the dredge on a platform and begin pawing over specimens from the deep as the launch gets under way toward the mother ship.

A sprightly sailing canoe luffs to windward like a skimming dish, her tall white sail outlined against a shimmering skyline, and bounds homeward on a flattening breeze.

Ashore, a skiff piles into the surf and brown arms bend to the oars as five men pull out to sea from a narrow, shelving beach. Like an arrow, a speed boat churns toward the skiff, takes the men aboard and with the skiff in tow, speeds back to the gangway of the cruiser.

The Velero is gathering her brood of small boats utilized by scientists in a variety of activities about Gorgona, from dredging the bottom of the ocean to shore collecting along sandy beaches and rocky reefs. These and four other auxiliary craft make up a complement of useful bottoms especially designed to serve the purposes of the expeditions.

Each small boat is equipped with devices helpful to scientific work and members of the efficient crew use the boats to best advantage in order to facilitate work of the expeditions. A signal from the Velero's bridge summons the fleet and within fifteen minutes all may be picked up so that the vessel may move on.

Usually while scientists in the auxiliary boats are busy with their individual occupations, the Velero herself will be engaged in deep sea dredging for specimens with the special gear mounted on her bow, reeling 7,000 feet of cable and apparatus to sample the bottom of the sea at various depths.

While the Velero is under way, scientists and their helpers

aboard will be poring over thousands of specimens of marine life collected from stations just visited. All may be segregated, preserved and put away before the next location is reached. Thus the work is carried on ceaselessly, all through the day and far into the night. No time is wasted.

From stem to stern the Velero is outfitted to accomplish the utmost in results on long range cruises. She was designed and equipped to cruise 10,000 miles without stopping and to provision thirty men for ninety days. Her main engines are twin Diesels of 850 horsepower each, direct-connected to twin shafts with opposed screws taller than a man. She has sixteen fuel tanks with capacity of 54,000 gallons. Fresh water storage is ample for all uses at sea.

Five large refrigerators forward afford food storage for perishable supplies in quantity sufficient for every need. Two more refrigeration units serve the main galley, another the crew's quarters, and still another is used for film storage. Refrigeration power units are interchangeable so that there is adequate reserve against any possible breakdown.

All enclosed rooms on the Velero are thoroughly ventilated by separate systems of air intake and exhaust. Heating throughout is electrical. Since the vessel is completely electrified, every section of the ship utilizes modern appliances. Main shaft generators supply current while the craft is under way. Stand-by Diesel-powered generators carry the load at anchorage.

There are two or more mechanical means of doing anything that may be required aboard the Velero. Nothing is left undone to provide every conceivable measure of safety and convenience. She's equipped for unfailing power under all conditions afloat.

While her decks are spacious and accommodations for personnel afford every comfort, the vessel is essentially a working boat. Machinery, equipment and stores of supplies make it possible for skilled mechanics and engineers of the crew to construct on board almost any device needed afloat or afield and also to effect all sorts of repairs and replacements.

Often, in out-of-the-way places, members of the crew have been called upon to repair or manufacture parts for machines, earning the gratitude of persons isolated from the world by months of travel.



DREDGE REEL on bow of the *Velero III* which holds seven thousand feet of specially treated plow steel cable used in dredging ocean depths for valuable scientific specimens. Below, the steel jawed dredge net going overside.





VELERO III conducting dredging operations in the Galápagos.
Below, one of the power launches dredging in shallow waters
off Cocos Islands, a fertile field for zoologists.





COLLECTING SPECIMENS throughout the eastern Pacific Ocean on voyages of the *Velero III* is attended by intense work on the part of scientists. In this group of pictures, collectors are shown utilizing a small dredge which is capable of scratching bottom at depths of two hundred fathoms. Native divers sometimes are employed to secure coral heads in shallow waters of the tropics. Minute marine animals are found in and about most forms of coral.





SCIENTISTS PORE over dredge haul landed on demountable screen on fore-deck used for preliminary sorting.



DR. H. W. MANTER, parasitologist, University of Nebraska, examining nematode and trematode parasites collected from fishes. Most marine animals are hosts to numerous parasites.

DR. WALDO L. SCHMITT,
curator of marine invertebrates,
United States National
Museum, authority
on crustacea, in his
laboratory aboard.



DR. C. MCLEAN FRASER
oceanographer, University
of British Columbia, au-
thority on coelenterates, at
his outdoor laboratory on
the quarterdeck of the
Velero.

DR. GEORGE S. MYERS, curator zoological collections, Natural History Museum, Stanford University, ichthyologist, at work on rare specimens of fishes. While large game fishes are best known to laymen, the sea is the home of thousands of tiny species which interest scientists.



DR. HUBERT LYMAN CLARK, specialist on echinoderms, Museum of Comparative Zoology, Harvard University, classifying specimens.





MUD HAULS taken by sounding line at each stop of the Velero are carefully examined for specimens and preserved by scientists. Charles Towers and Alex Hill, zoologists from the University of Southern California, are studying character of a mud haul

COLLECTORS examining broken coral for specimens aboard Velero III. Zoolo-gists Charles Wade and Bruce Craw-ford; botanist Jack Rempel, right.





SCIENTISTS and collectors on voyage assembled on the bridge of the *Velero* with mascots of the cruise—a spider monkey and a Hood Island kid.



SPIDER MONKEYS are favorites of thousands who visit the San Diego Zoo, where many of these amusing animals have been placed by the expeditions Hall Funke entertains the simian.

WEIRD ANIMALS, birds, reptiles and marine creatures are taken in remote corners of the eastern Pacific on each of the expeditions and presented to institutions in the United States. On board (opposite page), they require expert care.





DR. H. M. WEGEFORTH, president San Diego Zoological Society, authority on aquatic and land animals, aboard the Velero III with rare bull pup of the Stellar seal.



KARL KOCH, ornithologist, San Diego Zoological Society, experienced in the care of tropical and marine birds, in the field on Charles Island, Galápagos.



SHELLFISHES intrigue scientists, not only because of their appealing beauty and strange forms, but because of their habits and the contributions they make to the amazing history of flora and fauna of the sea. In the picture above, L. M. Paquette is examining pectin shells from the Gulf of California for commensals



CAPTAIN HANCOCK collecting shellfishes with an oyster rake in shallow waters of the Gulf of California



ANXIOUS NATIVES along remote shores of the tropical Pacific often crowd about the Velero in their dugout canoes seeking medical aid. In the accompanying photographs, natives of Bahía Honda, Panama, are shown as they congregated alongside a Velero lifeboat where scores were examined for real and fancied ailments by Dr. Edwin O. Palmer, ship's surgeon on several cruises. Through such services members of the expeditions have built friendships with many people in distant lands and not infrequently have been able to alleviate real suffering or, now and then, to save a life.



EQUIPMENT

In an after starboard room aboard the *Velero III* there's an impressive array of complicated instruments, lights, cameras, projectors, tools, and carefully arranged dozens of lenses, plates, filters, slides and attachments.

When the ship is at anchor, usually in some isolated bay far from the haunts of man, one may peer into the laboratory, guided by the whirr of a motion picture camera, and see a pinpoint of light focused on the slide of a large microscope.

A serious, tense individual may be dimly observed working with a maze of micrometric adjustments. This will be one of the able technicians attached to the expeditions.

Probably he will be taking motion pictures in color of some unusual microscopic denizen of the ocean, a minute organism invisible to the unaided eye. This microscope is one of the finest instruments made, probably the only one of its kind in the west.

Data permanently recorded in the field by the use of this microscope are of immense importance to scientists. Most marine specimens lose their natural coloring within a few moments after they are taken from their native habitat. Motion pictures taken on the *Velero* with the aid of the microscope provide one means of preserving natural colors and actions of the specimens obtained. These comprise important records for science, and aid visual education in universities and museums.

There are two other dark rooms aboard, furnished with special equipment to promote the best possible results from expedition work. Developing, printing and enlarging of still pictures can be carried on under favorable conditions at sea.

Light, heat and humidity in tropical waters multiply complex problems for the photographic section. Many ingenious devices and methods have been worked out to surmount difficulties that arise. Refrigeration units maintain proper temperatures for film, paper and developing agents and electric heat is used for drying. Dark rooms are the most complete that could be installed on sea-going craft.

Camera equipment is chosen for its versatility and usefulness under the most difficult conditions. Atmospheric changes are extreme and often rapid in the tropics. Variations in light sometimes may be extraordinary.

Locations range from arid desert areas to the most humid tropical shores and from rain-swept isles to snow-clad Andean heights. At sea there are problems associated with humidity and salt spray, fog, rain and wind. Vibration and the normal movements of the ship offer still further obstacles to be overcome.

Motion picture cameras are equipped with a wide range of lenses to be most useful in making educational films. They are used in photographing forms of wild life from enormous mammals to microscopic single-celled organisms. Telephoto lenses rarely are used except to photograph birds in flight or to magnify specimens in their natural habitat, for most wild creatures encountered are easily approached as they have no fear of man.

In the Gulf of California and on remote tropical islands it is not unusual to see birds perched on or under camera tripods, for many species display innate curiosity concerning anything new or strange invading their domain. Marine and land animals often exhibit the same naïveté. Thus many remarkable pictures have been obtained of wild life where man is not recognized as an enemy.

Both still and motion pictures are carefully catalogued so that they may be readily available for laboratory reference and for educational uses in recognized institutions.

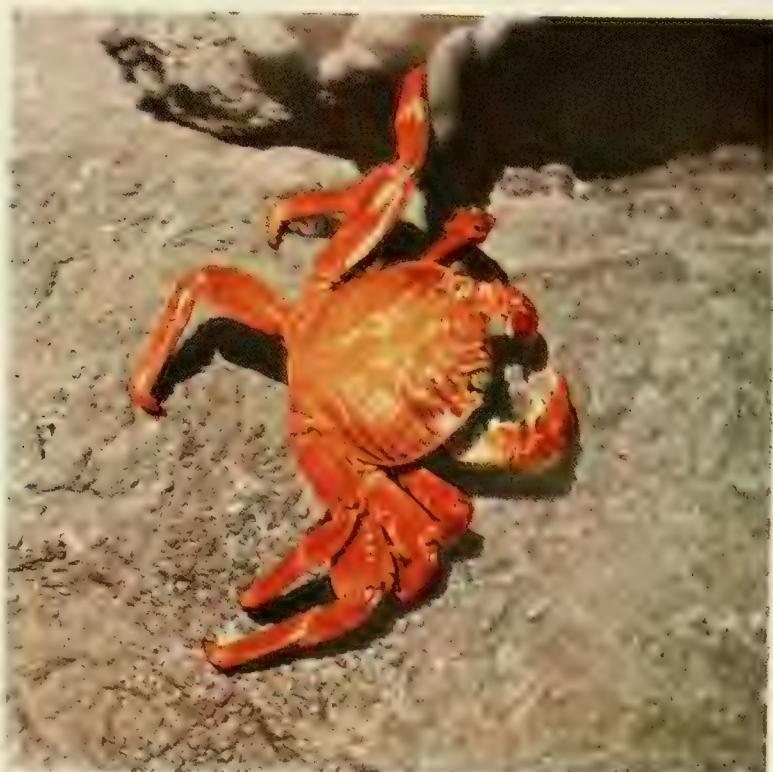
Color films have been extensively used in recording the work of the expeditions in all parts of the eastern Pacific Ocean and comprise an important section of the great library of educational pictures compiled in recent years. As color processes are perfected in the industry, they are adopted by the expeditions whenever they become useful to scientists.

Transparencies for projection and natural color reproduction are made with the most modern miniature cameras and there is an assortment of larger equipment for the making of still pictures in black and white. The potentialities of these instruments range from fast action pictures to portraiture. Enlarging machines and printing frames in the dark rooms are the most modern devised.

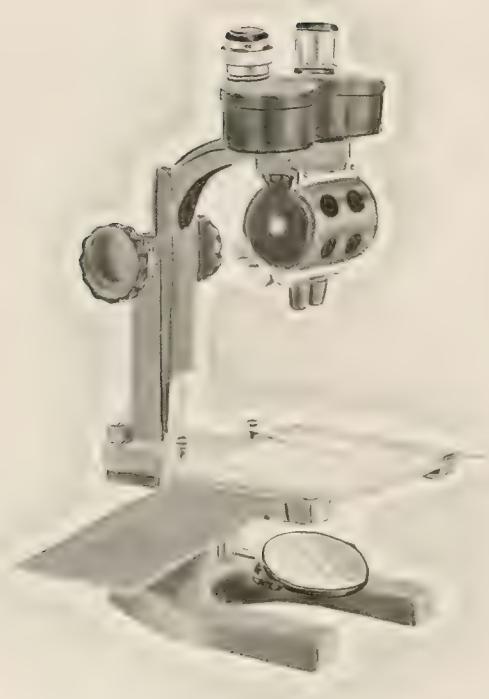
For purposes of instruction and entertainment on board the *Velero* there are projecting machines and sound reproducing equipment adapted to film sound track and interchangeable for recordings or radio pick-up. This equipment is constantly being improved and augmented for scientific uses.



ONLY PERFECT specimen of rare species of starfish known to science is this *Leiaster teres* in the Hancock collections. Only three specimens are known, the first having been described in 1871. This one was taken March 8, 1937, in Ballena Bay, Espiritu Santo Island, Mexico.



SALLY LIGHTFOOT is the common name applied to this brilliantly colored crab, widely distributed in the tropics. The scientific name, though it sounds equally facetious, is *Grapsus grapsus*. Sally Lightfoot is phenomenal at getting about over spray-showered rocks, making spectacular leaps.

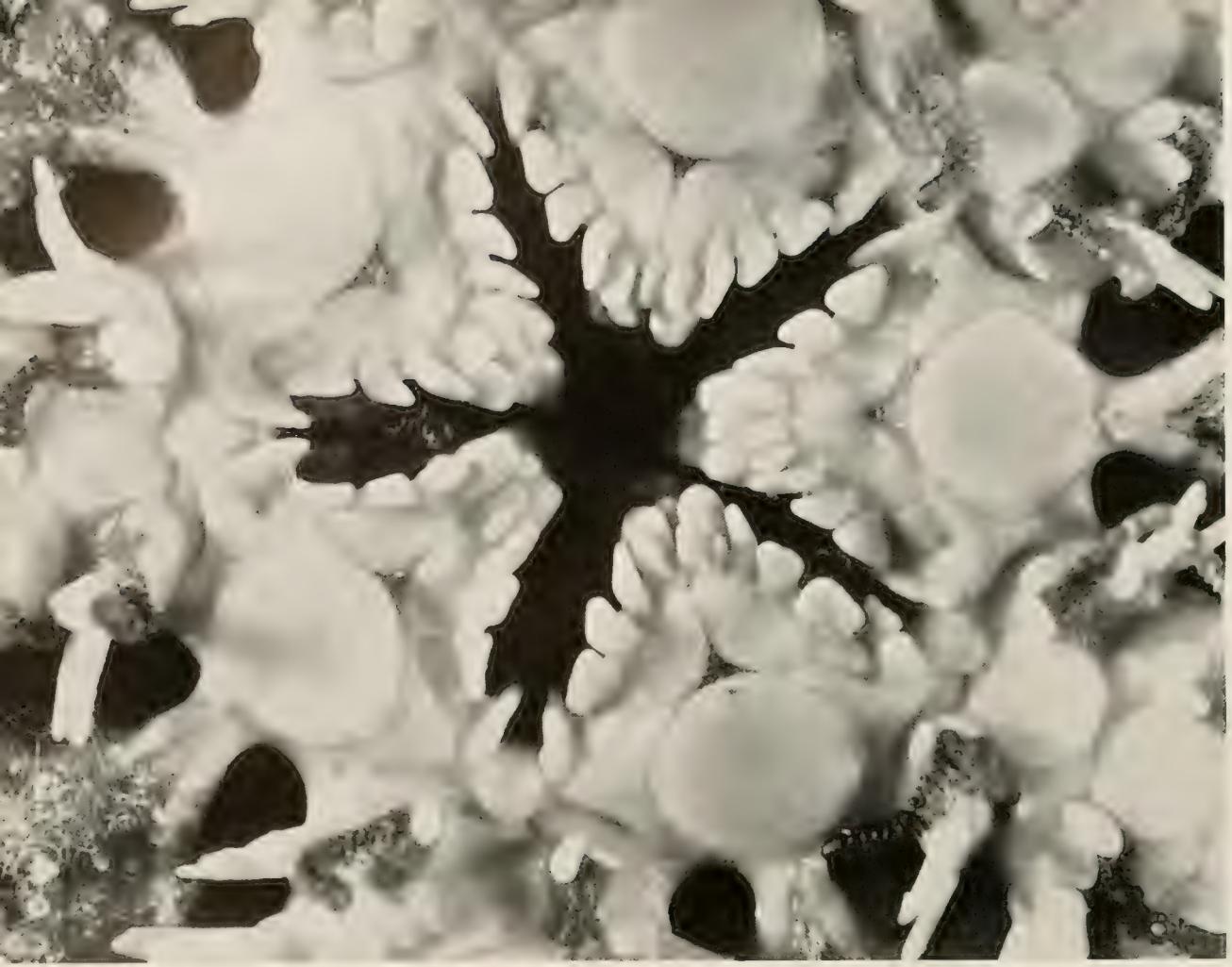




STARFISHES are among the most colorful marine creatures and often have amazingly intricate structures. The name arises from the fact that they usually have five points, or rays in multiples of five. This is an *Astropecten regalis*.

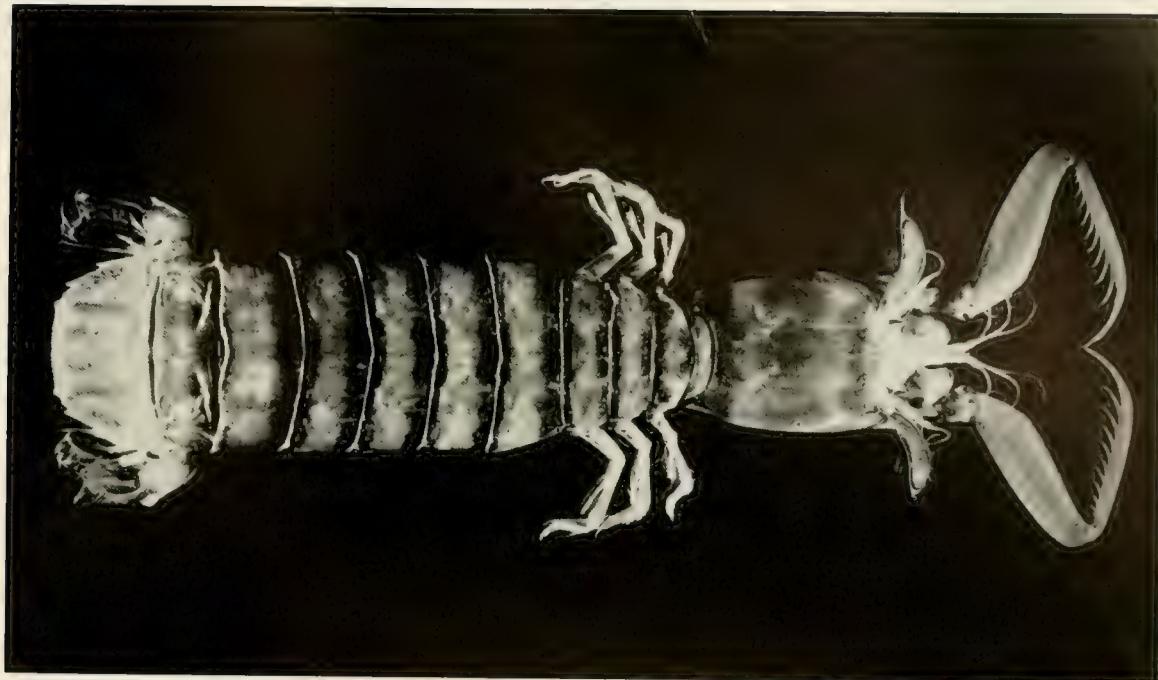
VELVETY appearance of the underside of a sea star such as this *Astropecten californicus* is due to innumerable tube-like feet by which it crawls or grasps its prey. Its mouth is in the central portion of a disc formed by the juncture of rays





HIGHLY MAGNIFIED mouths of a brittle star, *Ophioderma panamensis* (above), and a club-footed sea urchin, *Eucidaris thouarsii* (below), emphasize the highly complicated structures of some marine animals which scientists study minutely.



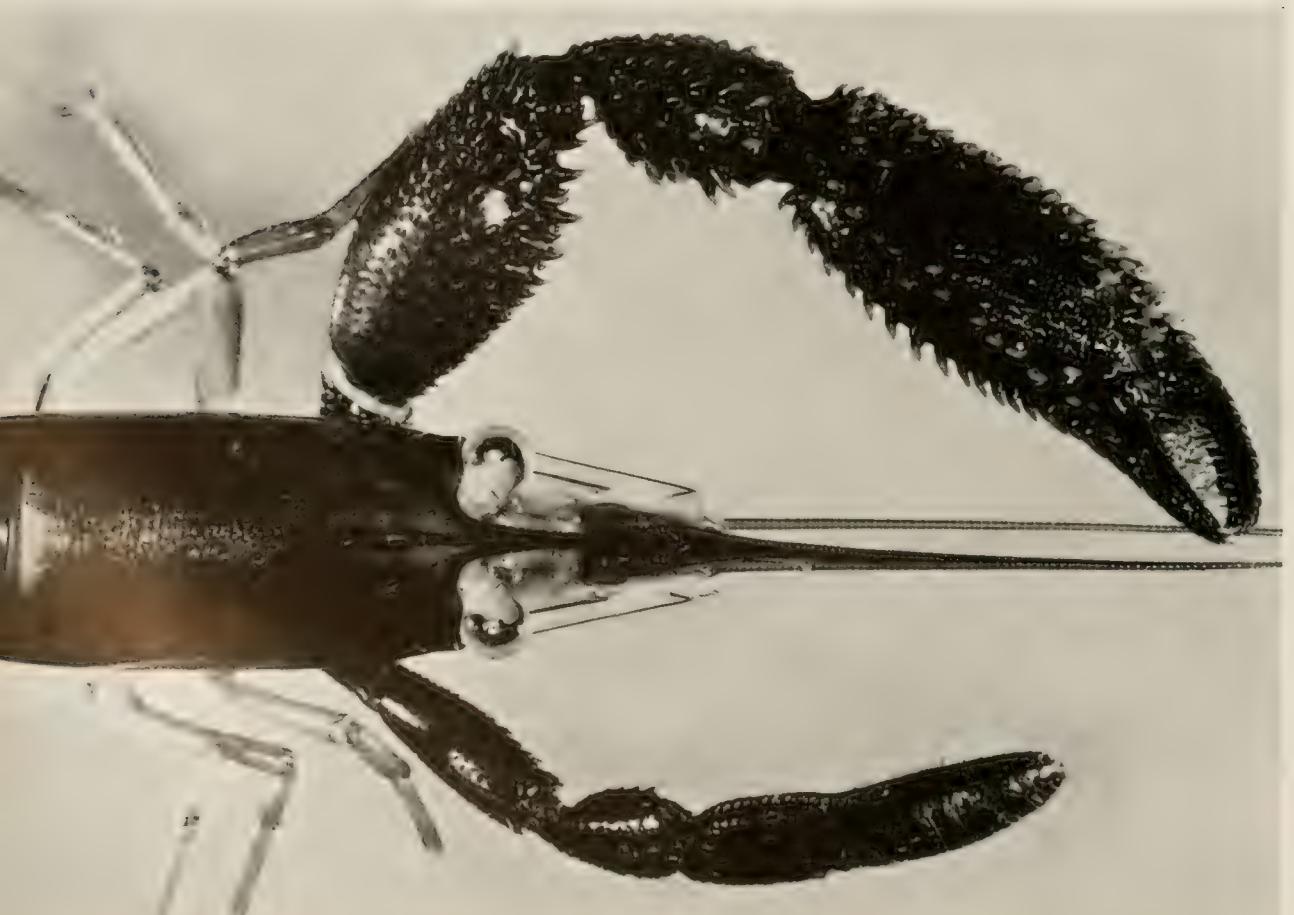


MANTIS SHRIMP, common in the Gulf of California, acquired its name from the way it holds its claws, imitative of the sup plicating position attributed to the Praying Mantis of the insect world. A close-up of the shrimp, *Lysiosquilla maculata*, dis closes details of the head.





DELICATE TRACERY of this highly magnified siphonophore suggests a sunburst jeweled with pearls. It is a free swimming hydrozoan, often translucent and sometimes highly colored. Below is the head of a blue shrimp, *Macrobrachium olfersii*, taken from a fresh water stream on Chatham Island in the Galápagos Archipelago.



IMMENSE CLAWS of some crabs seem all out of proportion to the size of the animal. This oxystome crab, from the Gulf of California, is *Randallia americana*, a female.



PROTECTIVE armament of many members of the cancer family often develops fantastic forms. The creature below is a Keep crab, *Pugettia dalli*, from the coast of California.





LONG-LEGGED shrimp bears some resemblance to angular spider crab shown at right.



SPIDER CRAB dredged from tropical Pacific waters has mosquito-like rostrum. Its name is *Stenorynchus debilis*.



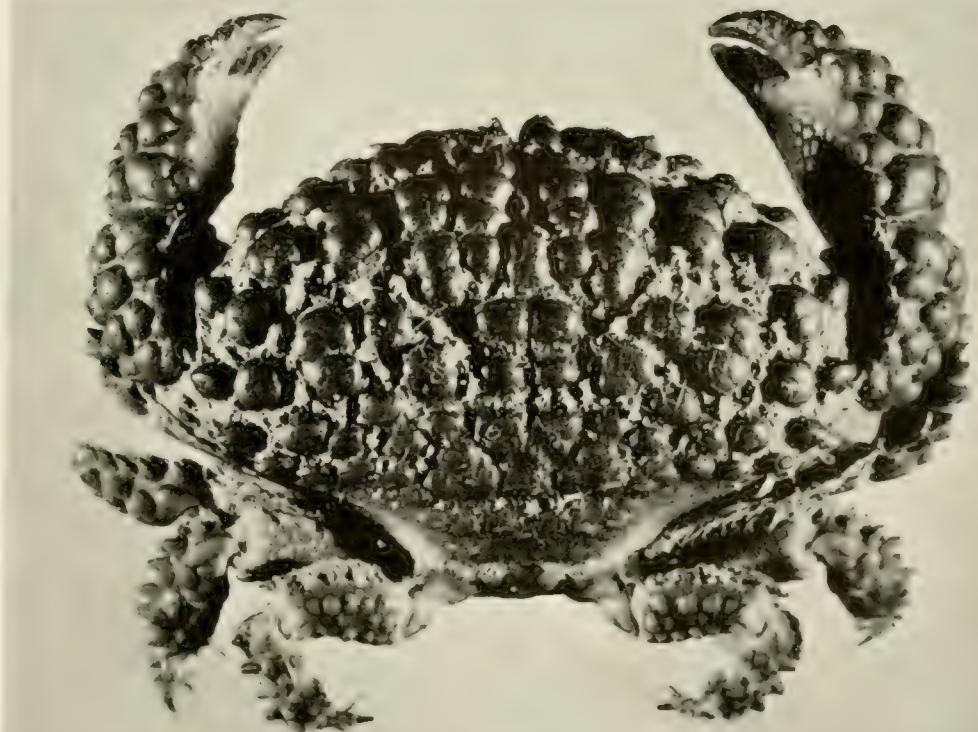
HARD SHELL crabs often are brilliantly colored but *Taleipus nuttallii*, left, is a dull reddish brown. *Teleophrys cristulipes*, below, is a tropical spider crab.



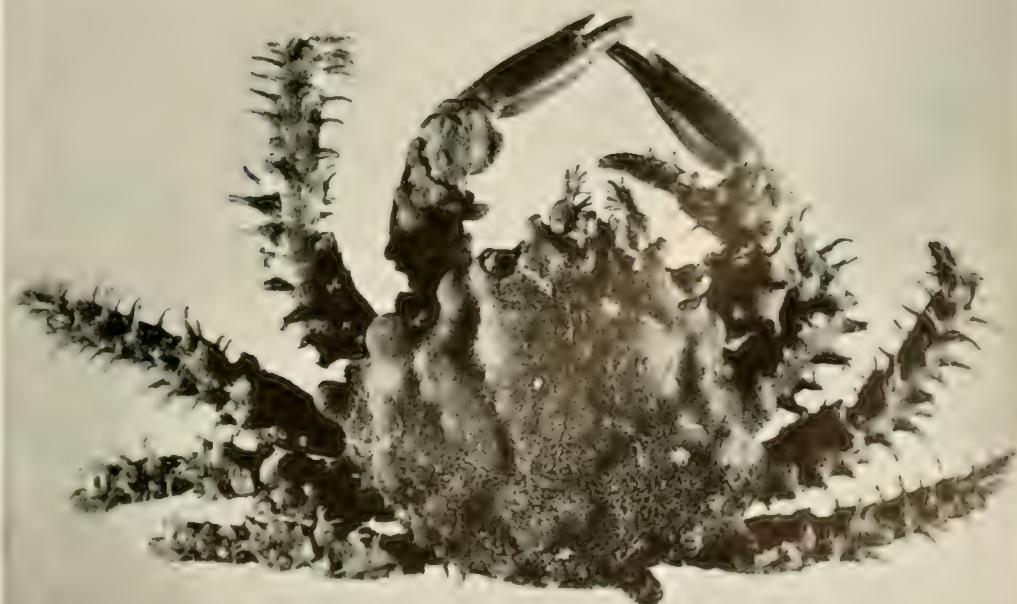
HAIRY CRAB from the Gulf of California, *Pilumnus townsendi*, shows one of the myriad forms of camouflage which nature provides for the countless species of crustaceans.



PEBBLE CRAB from the Galápagos, *Dairia americana*, usually is found on brown, pebbly bottom where his form and color secure him maximum protection from marine enemies.



PURPLE SPIDER crab, found only in the Galápagos, *Mithrax nodosus*, is another crab protected by both color and armament. Animals like these have power to regenerate legs and claws lost in battle or by accident.





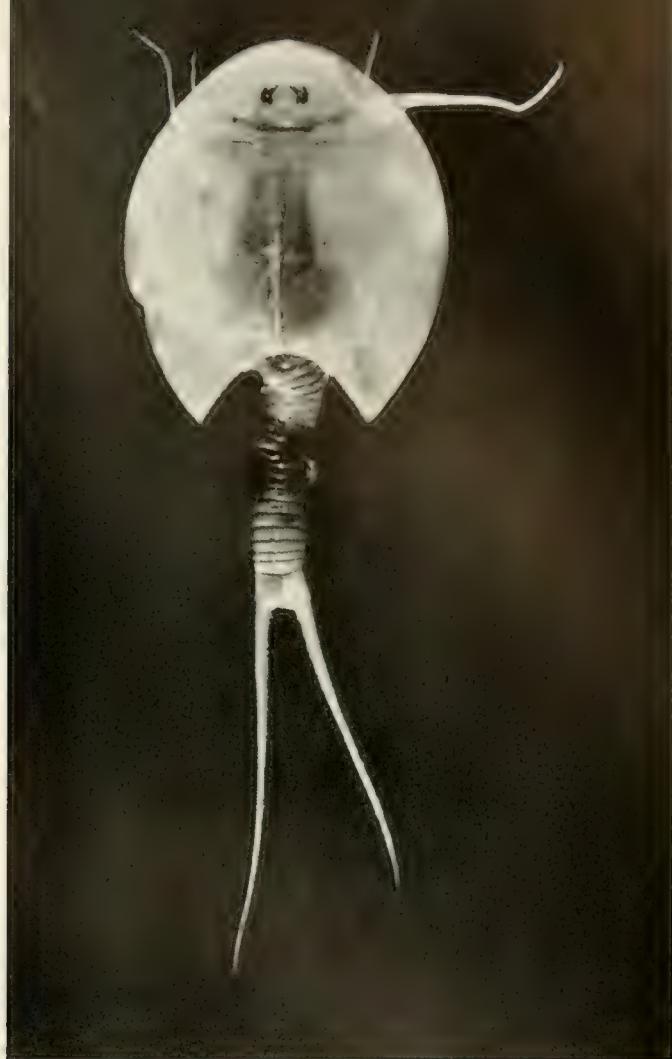
FREE SWIMMING crabs like the two on this page pursue an altogether different existence from that of their less nimble relatives and usually are more streamlined and graceful. *Cronius ruber*, left, comes from the Galápagos Islands. Note posterior paddle-like legs.

ODD SHAPES among crabs fascinate scientists but remain inexplicable. *Callinectes bellicosus*, below, is a near relative of *Callinectes sapidus*, edible blue crab of the Atlantic seaboard. He is a prize from San Gabriel Bay, Espíritu Santo Island, Gulf of California.





MARINE EDITION of the common sow-bug is this isopod, *Pentidotea resecata*.



FRESH-WATER crustacean from the Galápagos, a phyllopod found in shallow pools.



CORALLINA has hard limy joints as shown in this impressive macrophotograph.





FLYING FISHES are common along Pacific shores but the spotted creature above, an immature *Cypselurus callopterus*, is rather rare.



GREEN ALGA shown above at left is a marine plant of *Dictyosphaeria* which forms iridescent green masses of large cells in rock crevices. The specimen is greatly magnified.



CORAL CLUMP, which resembles a head of cauliflower, is a common form of marine animal (*Pocillopora*) which many persons mistake for plant life.

LITTLE ANIMALS, forming colonial masses, combine to create sponges. There are hundreds of different species having this identical shape.



BLACK MUREX from the Gulf of California, off La Paz, *Phyllonotus radix*, furnishes a secretion from which natives make purple dye.



LACKING A SHELL of its own, this grotesque creature, *Hypoconcha panamensis*, has its fourth and fifth legs modified to hold half a bivalve shell on its back for protection.

BURROWING PIDDOCKS secrete a solvent which enables them to bore smooth holes into solid rock, coralline formations, or the thick shells of mollusks, affording them protection from numerous animals, chiefly starfishes.





GASTROPOD EGG MASS attached to back of mollusk shell, *Cardium elatum*.



TROPICAL TICKS have a severe and noxious bite annoying and often infectious to humans and wild animals. A true ectoparasite, *Amblyomma cajennense* is related to the spiders.

KISSING BUG is the name commonly applied to the glossy Hemiptera below which carries Chagus disease, or sleeping sickness, and occurs in the province of Esmeraldas, Ecuador. *Triatoma megnista* is related to the assassin bug and is a carrier of the blood parasite *Trypanosome rhodiense*. Rats are a common carrier of the flagellate protozoan which causes the disease, often fatal to humans within three days. The kissing bug acquired its name from its propensity for attacking the lips.





BLUE CRAB from Independencia Bay, Peru, is a tiny specimen which has been greatly enlarged in this reproduction. The crab is known to science as *Porcellana mitra*, a commensal species whose host was a large starfish, *Stichaster aurantiacus*. Drawn to scale and painted in water color by Anker Petersen, scientific artist, the animal is reproduced here by means of conventional four-color process plates. The original specimen was only two millimeters, or 0.07874 inch, in length.

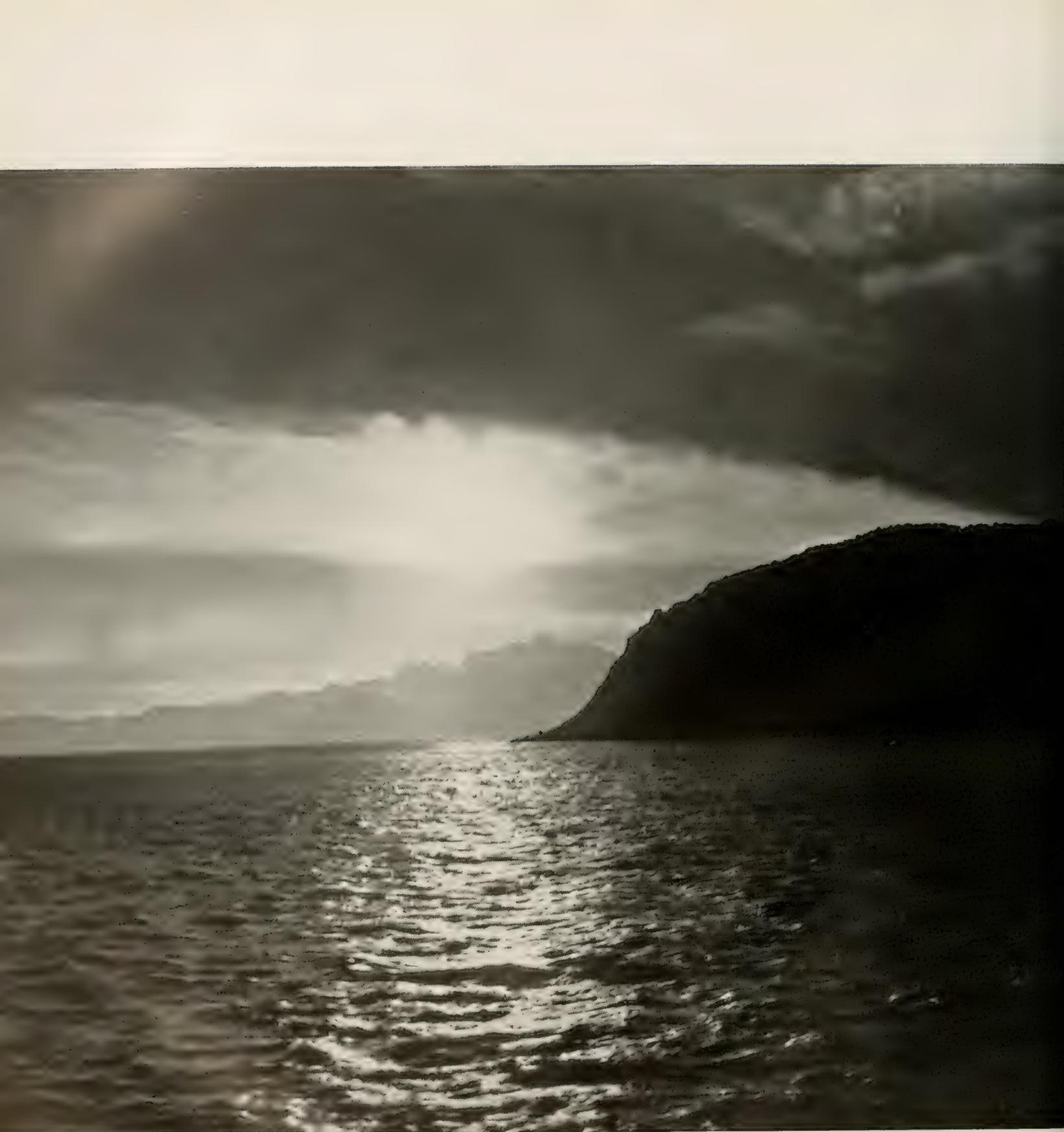
PUFFER FISH photographed in natural color in a shallow tide pool in the Gulf of California is reproduced from a one-half-inch section of film. These odd little fishes have the power to inflate themselves like toy balloons, becoming too large for their natural enemies to swallow. Others bear sharp spines which are repellent to enemies. This one has the impressive name, *Canthigaster punctatissimus*.







DECKS LOADED and holds filled for an extended cruise in tropical waters, the *Velero III* is shown dockside about to cast off on a voyage of scientific exploration. Western coast lines of the Americas and their offshore islands are familiar sights to members of the expeditions. Each voyage is carefully organized to achieve maximum results for scientific investigation.



RADIANT SUNSETS such as this frequently are seen from decks of the Velero III in tropical seas. The view above includes the rugged shoreline of the eastern portion of Baja California as the sun casts its ruddy glow across that broad, arid peninsula. In warm waters of the Gulf of California, many rare and interesting forms of marine life are found



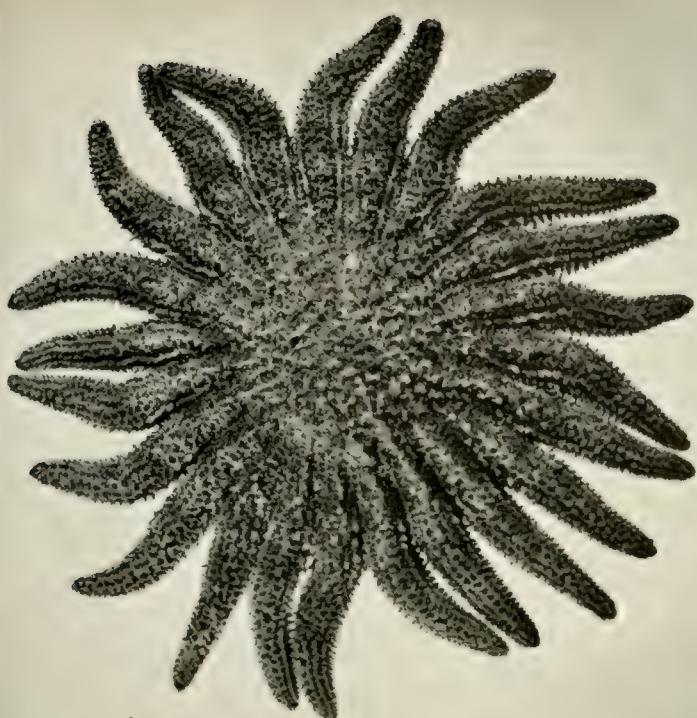
COUNTLESS RUGGED ISLANDS and islets dot the Gulf of California and rise in formidable spires from the depths of the inland sea. Most of the islands afford ideal nesting grounds for millions of marine birds. The six hundred mile length of the turquoise gulf has not been fully explored. Zoologists and botanists find it a fertile field for investigation.



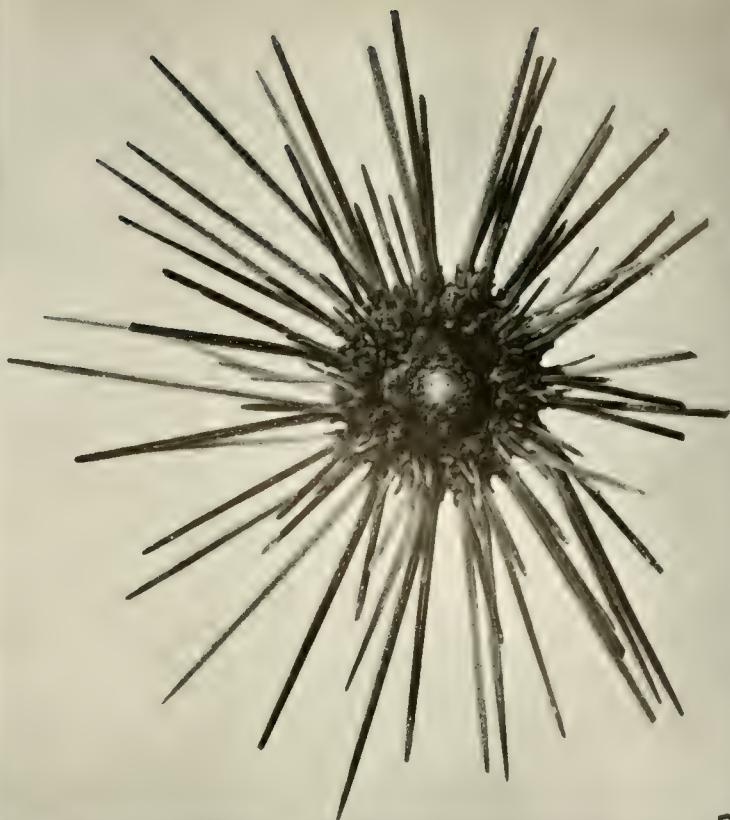
ISABEL ISLAND, near the mouth of the Gulf of California, is a natural marine bird sanctuary. Hundreds of Socorro Sooty Terns are seen on the nesting ground above.

GULL EGGS are spotted and slightly smaller than a medium-sized egg of the domestic hen. Numerous species of gulls search waters of the eastern Pacific Ocean for food.





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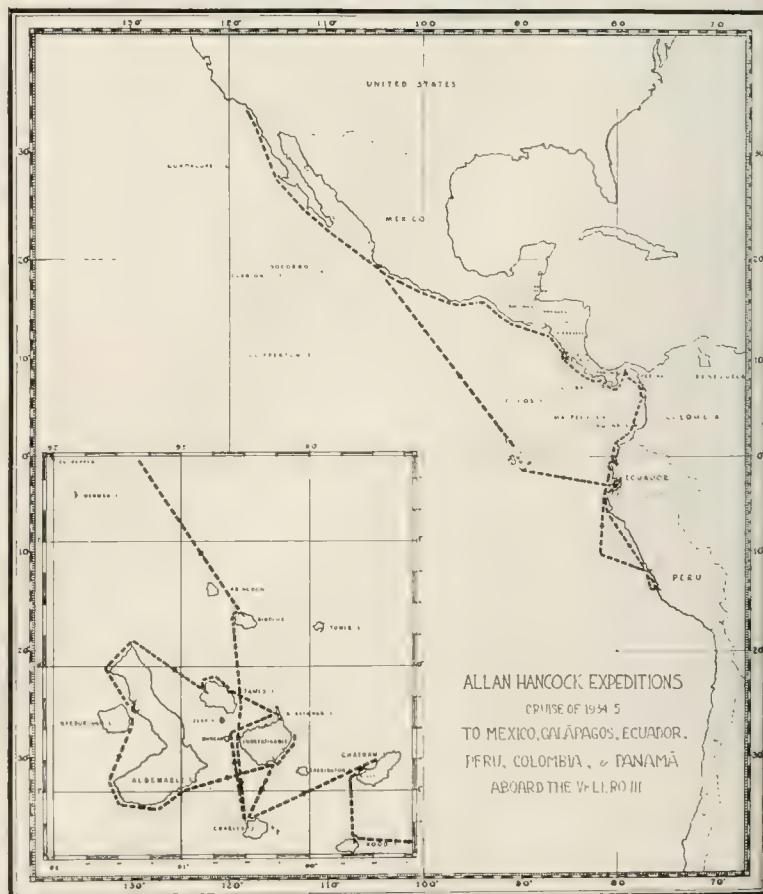
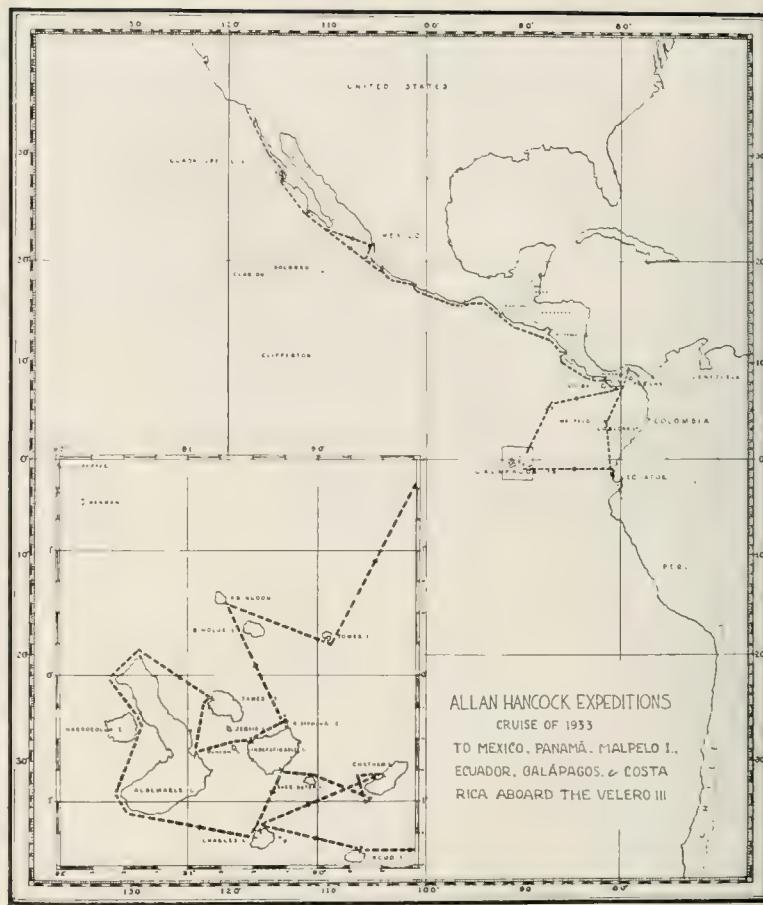
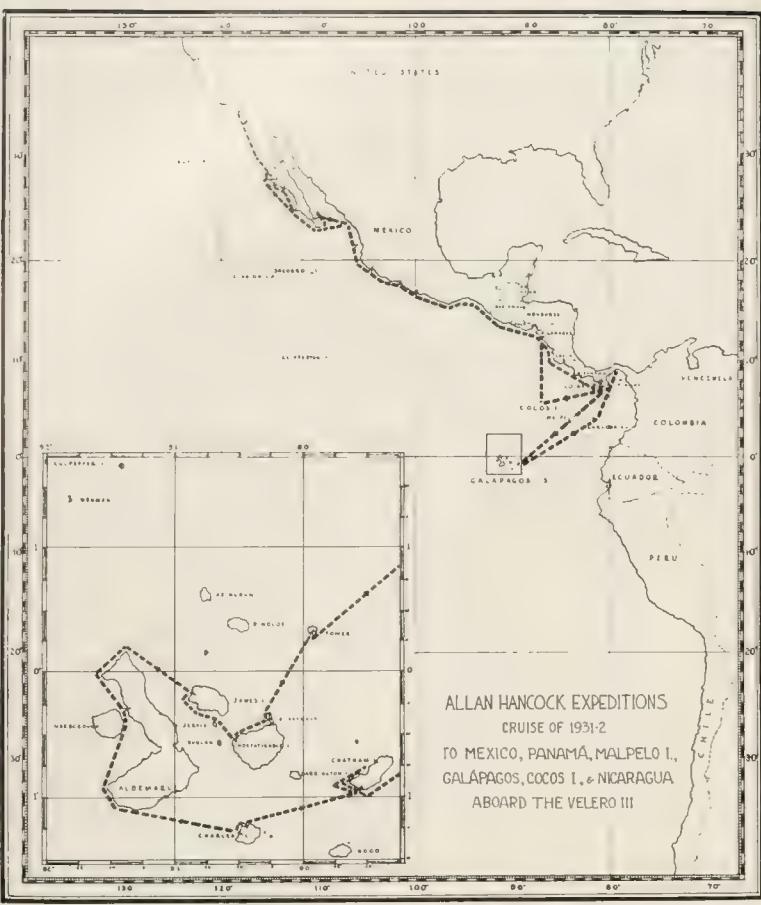


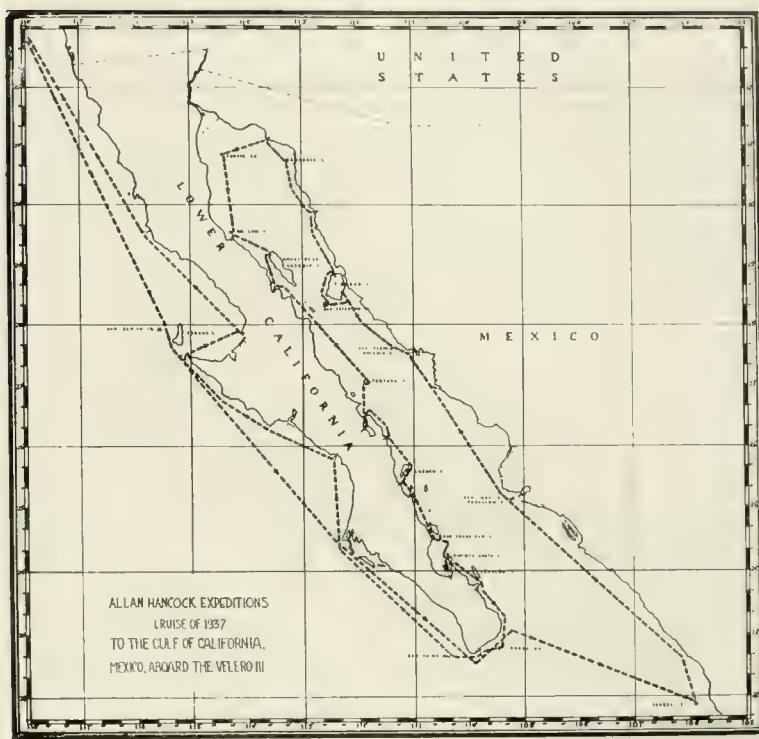
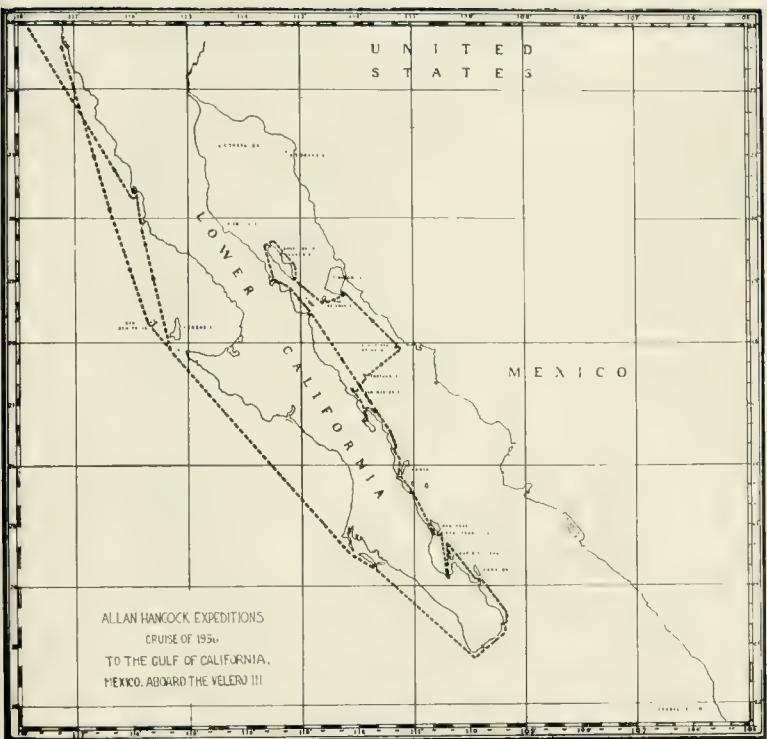
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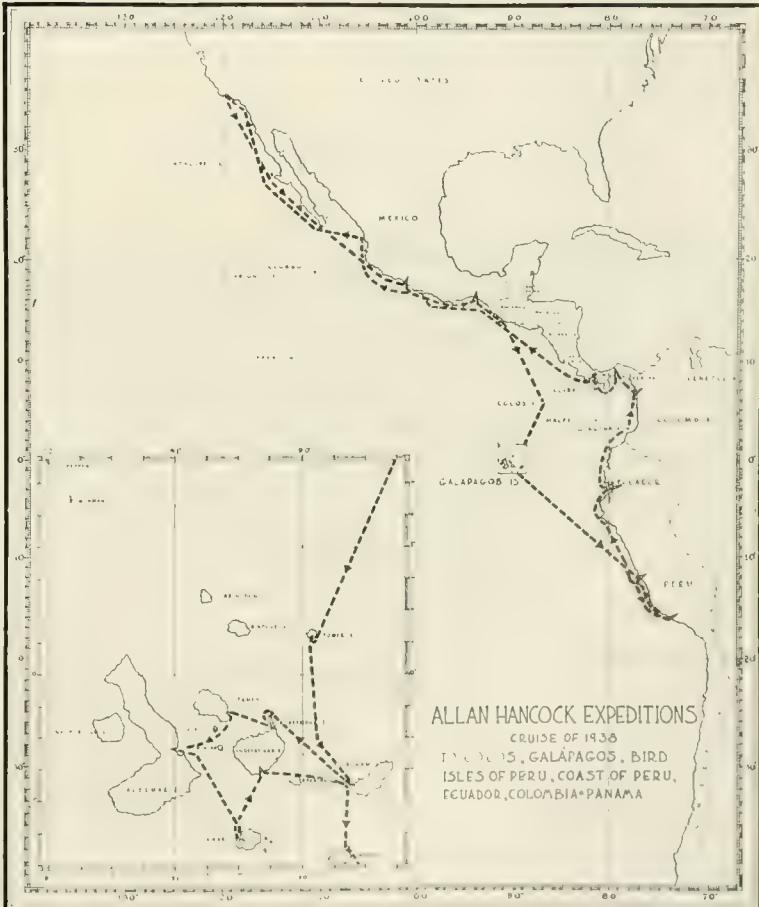
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CURIOS MARINE forms are legion in waters of the Gulf of California. Thousands of specimens of animal life from tidal zones and depths of the Vermilion Sea have been collected and presented to institutions for laboratory studies. (1) *Heliaster kubiniji*. (2) *Centrechinus mexicanus*. (3) *Clypeaster speciosus*. (4) *Astropyga pulvinata*.





MAJOR CRUISES of the Velero III to the Gulf of California and eastern Pacific regions, ranging from California to the southern limits of Peru, are depicted in accompanying year by year charts. Dotted lines indicate the courses, and arrows the direction of travel. Cruises represent approximately four hundred and fifty days at sea, one hundred and fifteen of them in the Galápagos Archipelago. Scientists and collectors from larger institutions of learning in the United States have been afforded every opportunity to improve their knowledge of the flora and fauna of the eastern Pacific on these extended voyages. The spring cruise of 1939 was routed through the Panama Canal and along the shores of Colombia and Venezuela as far as Trinidad and Tobago Islands, marking the first voyage into the Caribbean Sea. On the latter expedition the Velero III flew the pennant of the University of Southern California from her main truck.





PORT UTRIA on the Colombian coast is a calm blue estuary studded with islands and bordered with native huts. Tropical storms are frequent. The remarkable photograph of a waterspout, below, was taken during a sudden storm off Cocos Islands when the swirling fury almost overtook a small boat.





FISHING CRAFT hauled up on the shore at Manta, Ecuador, provide quaint scenery. Native fishermen range over great distances in these small sailing vessels. Homes of the pescadores frequently resemble the bamboo hut on stilts shown in the photograph below, typical of the settlement at Santa Elena, Ecuador.





CHASING WHALES to obtain educational motion pictures is an exciting sport for scientists. Tail flukes of a great killer whale are shown as the mammal sounded in San Gabriel Bay, Espíritu Santo Island, in the Gulf of California. Greatest show on earth is killers attacking a large whale.

FAMOUS LIZARD among scientists is *Diploglossus hancocki*, a rare species discovered on Malpelo Island some 200 miles off the coast of Colombia and 300 miles westerly from Panama. The island is a sheer rock, on which landings are most difficult. Herpetologists named the species in honor of Captain Hancock who made its discovery possible.

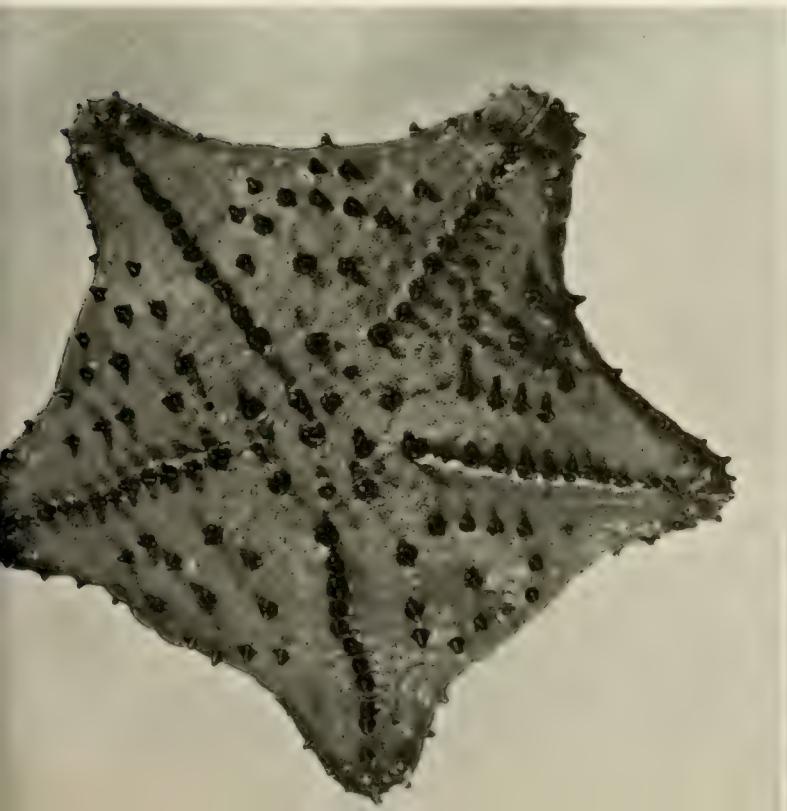




A NOTABLE FISH among scientists is the iridescent fellow above named *Agonostomus hancocki*. It is a fresh water mullet taken from a tiny stream on Chatham Island in the Galápagos. The specimen most nearly resembles fresh water mullet of the mainland of Mexico and Central America. Many new species of fishes and other marine animals have been discovered on the expeditions

SEA STARS are among the most decorative marine animals. Below is a spectacular resident of the Galápagos, *Nidorellia armata*.

SCIENTISTS carefully preserve prized specimens. Fred C. Ziesenhenne, zoologist, places minute marine animals in jar of preservative





CARMEN ISLAND in the Gulf of California boasts an inexhaustible lake of almost pure salt which is mined from the surface and transported for shipment in carts like those above. Mounds and sacks of salt are shown below.



GUADALUPE

GUADALUPE ISLAND is a wave-swept mountain top which the ocean seems eager to demolish. Rising out of the black depths of water which on all sides is two miles or more deep, her highest peak juts some 4,500 feet above the surface. If all Guadalupe were above mean sea level of the Pacific, it would make a mountain rising 16,500 feet skyward.

An enormous but long quiescent volcano, the island is one of the most rugged and unapproachable of all Mexico's offshore possessions. It lies about 140 miles off the coast of Lower California; is populated by a few guards and fishermen and provides haven for many forms of wild life.

Most famous for its enormous sea elephants, Guadalupe is not their sole habitat, but here they are most numerous. Grotesque, rugged animals they are, and along the wild, rocky, wave-battered beaches they seem to have found an appropriate home.

Giant combers from the open sea crash on the exposed sides of Guadalupe with the noise of a thousand thunders, making the landing of small boats hazardous if not well-nigh impossible. To get safely ashore with sufficient men and equipment to capture prized specimens of these giant mammals and transport them back to zoos for exhibition purposes is a major enterprise.

One good sized male sea elephant will weigh around 6,000 pounds. With head and neck erect, and standing up on his fore-flippers, one of the animals will tower above a tall man. For all their bulk and ferocious mien, they are a clumsy lot. Their mode of locomotion is more like that of an inch-worm than a common Pacific Coast harbor seal or California sea lion.

Sea elephants, however, can slither down a sloping beach faster than a man can walk. One doesn't get in their way. A blow from a flipper or a mere nudge of a mammoth's nose would send a man flying. They have great crushing power and tusks with which they rend and tear each other.

The sea elephant acquires his name from two characteristics which distinguish him from fellow aquatic mammals and which also give him some resemblance to the elephant family.

Mirunga angustirostris has an elongated snout which appears to be a diminutive of the elephant's trunk. He also has a thick, crinkly skin with scant hair like an elephant. Naturalists compare

the sea elephant to the pachyderm more because of these features than his size and weight.

Unlike his namesake, the sea elephant has a rather disappointing cry. With a tremendous exhalation of air from his proboscis, the great bull succeeds only in making a ponderous sort of "Whoosh!" which in no wise resembles the trumpeting of the pachyderm, nor the roar of a great sea lion.

Found principally on Guadalupe Island and in small numbers on the San Benitos now and then, the sea elephant of the North Pacific has a counterpart in the South Pacific named *Mirunga leoninus*, which some say is even larger than the species found off Mexico. Some are said to measure 21 feet in length.

Members of the expeditions captured and brought back alive to the Zoological Gardens in San Diego one monster 18 feet in length, but he was not the largest seen on the shores of Guadalupe. He was selected as one of the healthiest large specimens. Females are considerably smaller than the males. The collection taken for the San Diego Zoo included females and young as well as the bull. Babies of the species weigh 800 to 900 pounds.

To accommodate the sea elephants, officials of the Zoological Society of San Diego constructed a large tank and cage where some of the animals have thrived. So far as is known, they are the only ones alive in captivity.

Thousands of visitors have watched the antics of these strange monsters of the deep, which feed chiefly on fish and consume enormous quantities at a meal. Like nearly all seals and sea lions, the sea elephants are subject to parasitic infestations which scientists are studying intently. Diseases among marine mammals are far more prevalent than most persons are willing to believe. Often the ailments of animals are disturbingly similar to illnesses among humans. Stomach ulcers are common among seals and other aquatic mammals. Lung mites and worms take their toll. Liver flukes or trematodes are pernicious invaders.

A wealth of pathological data of this character has been accumulated by scientists on the expeditions and many important lessons have been learned. Some of them are being turned to the benefit of mankind as data are correlated and analyzed. Studies are being made of the sources of parasitic infestations.



SEA ELEPHANTS of Guadalupe Island are engaged in terrifying combat in the remarkable photograph above. Although such titanic struggles are frequent during whelping and mating seasons, they rarely are seen by man, much less recorded in pictures. Educational motion pictures depicting the life of sea elephants have been obtained by the expeditions.





ENORMOUS HEADS, crinkly skin, large tusks and elongated proboscises of the huge sea elephants are clearly illustrated here. Vicious battles account for some of the scars on these two monsters. The thick hides also slough off in great flakes like chips.





SCIENTISTS SPY on sea elephants sleeping on beach at Guadalupe Island
How sea elephants shed their leathery skin is indicated below





SNORTING DEFIANCE, an eighteen-foot bull sea elephant is segregated from a herd by persuasion of an improvised iron wire gate. He is not combative but objects to disturbance of his slumbers. Below, the explorers have dropped a strong net over a large female of the species in which she will soon be completely entangled and buoyed to the *Velero III*. On board the animals soon become tame and learn to relish their daily ration of fresh fish from the ship's supply





SECURELY LASHED in an enveloping net a sea elephant rolls over and over in a tremendous effort to escape to the freedom of the surf. With flippers bound closely to its sides the animal is rendered helpless and ultimately winds up in a cage being lowered overside, as below, in port at San Diego.





DELIVERED SAFELY to the San Diego Zoological Gardens sea elephants from Guadalupe Island are introduced to their new home and keepers. In the photograph below, a taxidermist and helpers carefully create a plaster cast of a sea elephant on the beach at Guadalupe. From the cast the animal was re-created in a natural habitat group which has won acclaim in the Field Museum of Natural History at Chicago. Northern sea elephants were nearly extinct until a few years ago when a rigid protectorate was set up by the Republic of Mexico. In the past, sealers had slaughtered thousands for their blubber.





SCIENTISTS EXAMINE viscera of a sea elephant for parasitic infestation. Seated is Dr. H. M. Wegeforth, president of the San Diego Zoological Society. At the microscope is Dr. Charles R. Schroeder, now of the New York Zoological Society.

MILITARY OUTPOST of the Mexican government on Guadalupe Island has its headquarters and radio station in the building below. Sea elephant herds have been increasing under protection.





CALIFORNIA SEA LIONS shown in the accompanying pictures are commonly known to tourists as seals. They are perhaps the most intelligent of marine animals and are preferred by circus animal trainers for they quickly learn intricate tricks. These were photographed at San Benitos Islands. Characteristic of the rookeries is the scene below showing a nursing pup



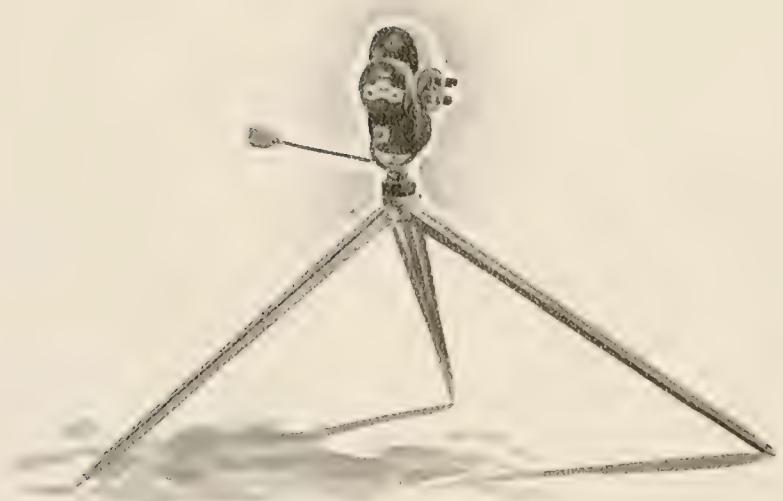


CAPE SAN LUCAS and its fantastic pinnacles of rock offer a seascape familiar to all coastwise mariners. This is the gateway to the great Vermilion Sea of Cortés, the 600-mile-long inland ocean which is the Gulf of California. In the lower picture the rocky spires are seen across the flying bridge of the *Velero III*





PLACE OF PEACE seems an appropriate name for the sleepy little town of La Paz which nestles on the shore of a sparkling bay carved from rugged terrain on the tip of Baja California. Though doubtless it was a place of peace to harried Mexicans who fled thence to escape persecution on the mainland, it has not always remained so. The casual wanderer may find bullet holes in hand-hewn doors and adobe walls frequently are pock-marked by musketry. La Paz was discovered by Fortuno Jimenez, one of the many followers of Hernán Cortés, Spanish conqueror of Mexico, in 1533. The church above is one of the most picturesque landmarks of the city.



LA PAZ

M

MEXICO clings to the North American continent like a gargantuan cornucopia filled to the brim and bulging in the middle. Overflowing from the lip of the cone is the peninsula of Baja California, an immense appendage which is important because it almost doubles her Pacific shoreline.

No other nation in the world offers greater diversity of climate or topography. Mexico dips her sturdy feet into the dripping tropics, rests her brown shoulders on burning desert sands and rears her proud head into lofty snowclad heights. Her rugged mountain ranges are burdened with treasure. Broad high mesas and fertile valleys are slashed with tumbling streams. Waters of two great gulfs warm her shores. Both abound with marine life.

Despite the rise and fall of ancient civilizations and centuries of development much of Mexico remains unexplored. This is particularly true in a zoological sense. The flora and fauna of her Pacific shoreline and the Gulf of California are little known. Distances so great as to challenge the imagination have been a deterrent to intensive exploration.

In order to tap Mexico's rich store of scientific lore two major voyages of the *Velero III* have been devoted almost wholly to the Gulf of California. Five other expeditions to tropical seas have included numerous stops along her Pacific coast. Knowledge of marine life in Mexican waters has been sufficiently enriched by these expeditions to encourage more detailed investigation.

Ashore there is much to interest the visitor in this vast, mysterious and hospitable land. Citizenry ranges from the most primitive Indian types to people of the highest culture. On the west coast there are numerous thriving communities. Others lie basking in the sunshine of old Mexican traditions. And in the more remote regions one may find aborigines living much as their ancestors did hundreds of years ago.

Because of their remoteness and aloofness the Seris of Tiburón Island may well be counted the most interesting of the coastal Indian tribes. Much has been written of them but reliable authorities say they remain one of the least-studied tribes of North America. They are distinctive in habits, customs and language. To the uninitiated they appear to speak with unintelligible clicks and clacks, guttural in character. They call themselves Kun-kaak or Kmike.

From the Opata comes their simpler designation, Seri, which may be translated "spry."

And the Seris indeed are spry. Both men and women are of splendid physique, with fine chests and slender, sinewy limbs. They are erect in carriage. Men and boys especially are notable for their fleetness and endurance. Living from hand to mouth in a sterile domain where agriculture is unheard of, they subsist chiefly on marine life, but also take some land game. In season they make use of mesquite beans, cactus fruits and other sparse vegetation.

Nomadic for centuries, the Seris transport all their possessions on their backs. There is no semblance of permanent abode. Should the weather dictate, they may erect low, flimsy windbreaks of desert brush called jacales. These are the domain of the women. The Seris live under a sort of matriarchy. Each clan is headed by an elder woman and consanguinity is recognized only in the female line. Chieftains are chosen by blood, not might.

Distinctive face painting is regarded as symbolic of Zoic tutelaries, with sub-specific characteristics indicative of clan membership. While this form of personal adornment is suggestive of practices in the Far East, the Seris are definitely Mongoloid in appearance. Isolated for unknown generations, the Seris failed to develop great civilizations such as were known to the Mayas, Incas and Aztecs. The Seris were discovered in 1533 by the great Spanish explorer, Alvar Nuñez Cabeza de Vaca. So far as history discloses, they have changed but little in more than four centuries. Civilization has given them a little clothing and some vices, but this tribe still holds itself proudly aloof and declines to mingle with other blood. This exclusiveness for which the Seris are notable is all the more remarkable because of the pronounced mingling of races in the western Americas. Pure Indian stock is becoming more and more rare.

Many interesting peoples in remote lands have been photographed on expeditions of the Velero III because their characteristics and mode of living invariably captivate educational groups. They lend color and human interest to the more serious scientific work of long voyages. From Lower California to the southern limits of Peru, isolated communities have responded to good will visits from the Velero's personnel.



IMPOSING SCENES such as this are not uncommon about the Sea of Cortés which also was known to mariners as the Gulf of Storms and the Vermilion Sea long before geographers named it the Gulf of California. Canoe-shaped craft of native fishermen and pearl divers dot the stretch of beach at La Paz. Most important port on the peninsula of Baja California, it has a colorful history of more than four centuries. Literally the name La Paz means "Place of Peace." Her palm-lined esplanade and a picturesque native bake oven are shown in two interesting views on the succeeding page.

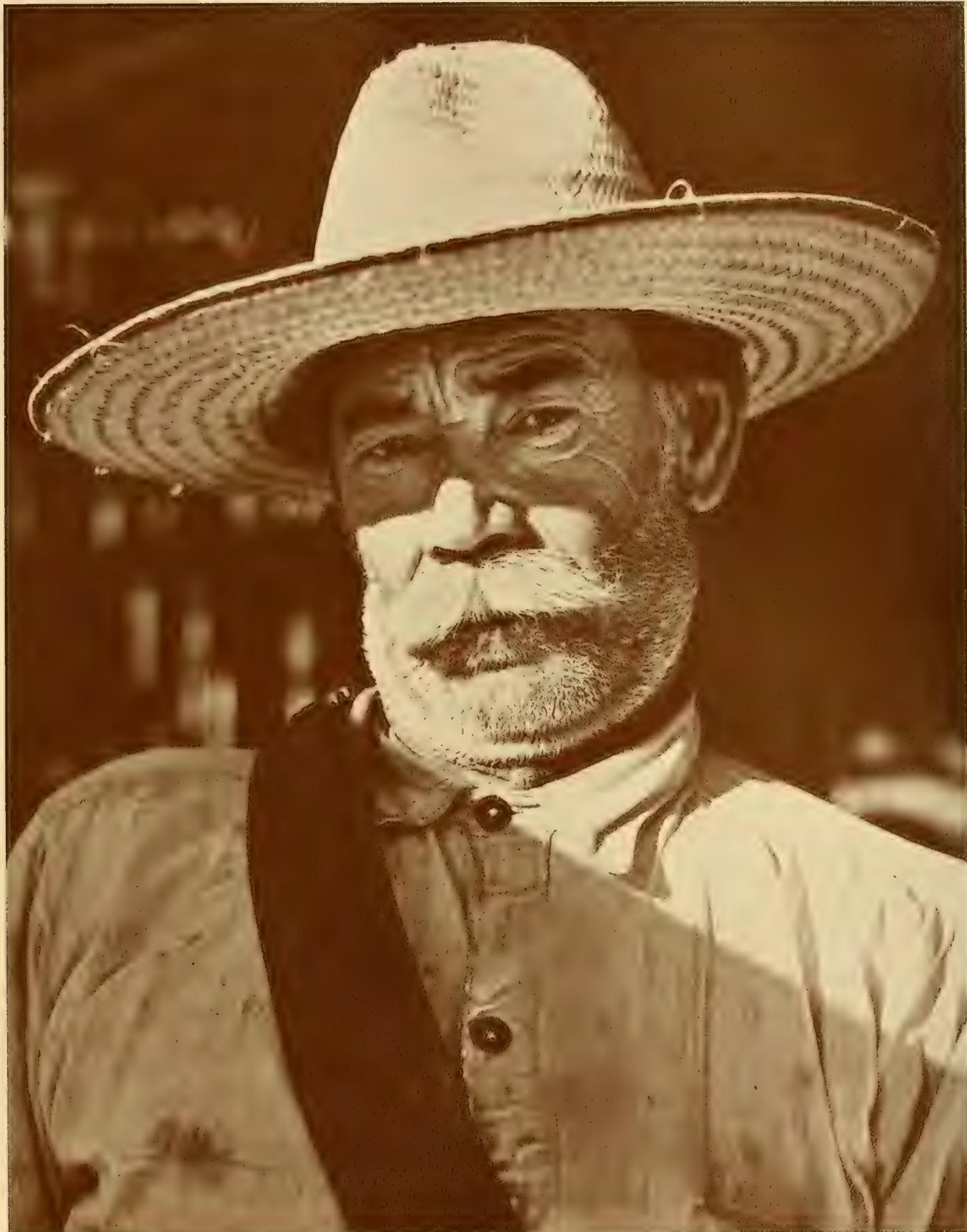




LA DUEÑA OF LA PAZ whose pious graciousness and benign countenance seem to characterize the deep rooted feeling of hospitality which abounds in the "Place of Peace."



OLD SPAIN speaks through the personality of this matron who is typical of that admixture of people outliving traditions of the past and building anew.



HIS EYES have smarted in the smoke of battle through more than one revolution in Mexico, but this stalwart remains an alert and staunch defender of La Paz.

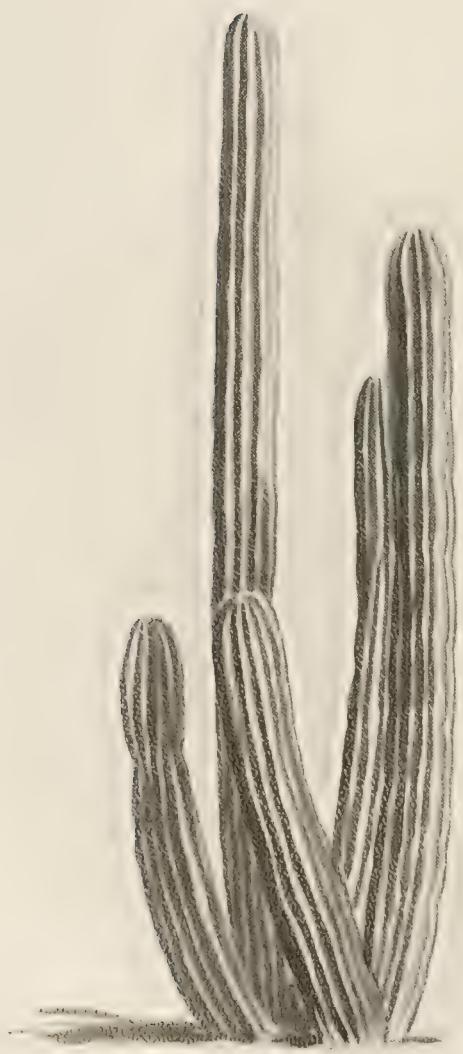


SCENES NEAR LA PAZ speak eloquently of the conflict between the old and the new. Above, children gather 'round a community well to dip water with a discarded oil tin. In the photograph below is the saddlery of an old rancho





DESERT PLANTS of Lower California and some of the many islands scattered throughout the Gulf of California stir the interest of expedition botanists. The ocotillo, or candlewood (*Fouquieria splendens*), is not a cactus. It is common throughout desert regions of the southwest.





JUMPING CACTUS is the name which desert habitues apply to this Cholla, a species of *Opuntia*, for tradition has it that vicious segments actually jump at passers-by.



Lemairocereus, sp. (*Pitahaya agria*)

Echinocereus, sp. in bud.





Veatchia discolor (Copalquín)

Ferocactus, sp. (Fishhook cactus)





GUARDY SENTINELS of the desert are the weirdly branched *Pachycereus*, commonly called Cardón by natives. Hawks and owls often take advantage of natural protection by building their nests amid branches of the giant cactus. This nest was found back of Agua Verde Bay, Baja California.





BELLE OF THE SERIS is this coy young woman as she appeared one year before she became the bride of the tribal chieftain. Her facial markings are applied with infinite care and may be almost as permanent as tattooing. Heiress to an ancient matriarchy she will some day rule her people as may her daughters' daughters. Her clanspeople live on Tiburón, largest island in the Gulf of California. Tiburón means shark.



A SERI BRAVE on Tiburón Island whose forebears gained for his tribesmen the reputation of being cunning and ferocious fighters. Now he dreams all day of Ahn-tah-co-mah, legendary hero. Huntsmen such as he display phenomenal powers of endurance on the trail and in the pursuit of game.



BLIND PATRIARCH of the clan silently contemplates past glories of the chase and tribal victories of his people. He has developed a scraggly moustache because he can no longer pluck it with the customary clam-shell tweezers used by braves. Facial adornment is lacking by reason of careless observance of the usual clan rites.



DIGNIFIED Matriarch of the Seri clan on Tiburón Island whose sons are qualified by custom to become chieftains. Facial markings are applied with natural dyes obtained from the juices of plants or various forms of marine life. Seris now wear threadbare clothing cast off from civilization. Formerly they fashioned garments from skins and hides.





SERI CHIEFTAIN and his girl bride are shown above in an unusual pose. Indians seldom display affection. The bride's facial clan markings are altered from the previous year (see page 156) denoting her marriage. At right, one of the elder Seri matrons of the clan. Seri types are shown on the opposite page, each with pronounced Mongolian characteristics. Though the men are extraordinarily fond of hats, the only ones they have are the gifts of infrequent visitors. The Seris do not spin or weave. Unlike most other primitive tribes they do not even create crude pottery. Tools and implements are practically unknown. They do not build save for the crude windbreaks of brush and sticks which they sometimes erect on the sands of Tiburón. In earlier times the Seris fashioned marvelous robes of pelican skins, wearing them feather side out.





BURNING SANDS and blistering sun on the scorched desert reaches of Tiburón Island sometimes drive the hardy Seris to erect flimsy jacales like that above. Members of one family clan are shown below. In all there were twenty-six men, women and children in the group. Formerly large numbers of Seris roamed the wilds of Tiburón. Wars and disease have decimated their ranks.





MAGNIFICENT DISTANCES mirrored in calm waters of the Gulf of California create the illusion of micrometric miniatures. Above is a remote stretch of the hidden bay at Puerto Refugio on the northeasterly side of Angel de la Guardia Island, an immense indentation hemmed in by a series of broad sand bars and jutting headlands. In the photo below the Velero III appears as a mere toy before a background of the Sierra Giganta at Escondido Bay.





SCENIC WONDERS abound in the Sea of Cortés. Men appear as specks on the sands of Willard's Point, north of Angel de la Guardia Island, above.





AWESOME FORMATIONS along the gulf coast of Baja California create a geologist's paradise for the study of stratification and erosion.





REPTILES THRIVE in the desert country of Baja California and among islands of the gulf. Members of the expeditions to this region find excellent opportunity to study many unusual reptiles. In the photo at left Captain Hancock is shown capturing an oddly spotted chuckwalla (*Sauromalus varius*) among the rocks of San Esteban Island.

SPOTTED CHUCKWALLA found on San Esteban Island in the Gulf of California is not a poisonous reptile. The only lizard of the western Americas recognized as poisonous is the famed Gila monster of desert regions in the southwestern United States



BLACK CHUCKWALLA found on Pond Island in the Gulf of California is rated as an unusually agile reptile, and has sharp pointed spines rising from its scaly skin. Nearly all such lizards bear protective colorings peculiar to their habitat



SNAKE HUNTERS of the expedition are equipped with a snake stick and a small sack to care for quarry. They are stalking a rattlesnake, coiled as below. John S. Garth, zoologist, handles the stick while the sack is held by Don Goodger, radio officer. The scene was pictured on Tortuga Island, Gulf of California.



VENOMOUS RATTLER sunning himself on large flat rock is coaxed to strike. Then nose of snake stick is slipped over his head and he is stowed away among zoological specimens, later to be exhibited in the snake house of the San Diego Zoological Gardens at Balboa Park. His name: *Crotalus tortugensis*.



SOMBER DIGNITY of the four young pelicans just beginning to acquire adult plumage intrigues cameraman of the expedition. The birds know no fear of man for they have not been molested. Below is a typical nest of the pelican common on the coast of California. The birds have a wide range. Pelicans of the tropics are larger and have exotic colorings.



REMARKABLE SCENES above and below reward the persistence of expedition photographers. Above is a close-up of nesting grounds of the Heerman Gull, *Larus heermanni*, on Georges Island. Below, gulf waters are churned into a froth by millions of leaping anchobetas, harried from below by feeding fishes and from above by hungry marine birds.



BOOBY BIRDS on Isabel Island in the mouth of the Gulf of California exhibit no fear of the intrusion of man. A motion picture camera is set up directly over their nest to obtain intimate scenes of family life. In the photograph below an odd Silver Hake, exotic gulf fish, poses in a salt water tank in one of the laboratories aboard the *Velero III*. In these tanks many strange creatures of the deep are photographed in natural color soon after they are caught.





TROPICAL ISLANDS of the eastern Pacific contrast sharply with the arid and semi-arid islands of Mexico and South America. Throughout the tropics verdure is exotic. Cocos Islands, which belong to Costa Rica, are an example. Above, the Velero III is anchored in the warm waters of Chatham Bay. Below, a landing party is shown coming ashore in a heavily laden skiff.





JUNGLE GROWTH ashore on Wafer Bay at Cocos Island illustrates the density of rain forests which often are so thick that the sun never reaches the earth. An abandoned gold hunter's shack at the mouth of a fresh water stream is shown above. Below is a more remote section of the palm-lined beach.



DREDGING OPERATIONS in Chatham Bay at Cocos Islands produce rare hauls of echinoderms to the great satisfaction of Dr. Hubert Lyman Clark, Museum of Comparative Zoology, Harvard University. He identified forty-three species of echinoderms from one day's work. Tide pool collecting ashore is equally profitable to the zoologists shown below. At left, with geologist's hammer is John S. Garth, research associate in zoology at the University of Southern California who has been a member of each scientific expedition of the *Velero III* and usually takes charge of the scientific section on cruise. With him are Dr. George S. Myers, ichthyologist of the Natural History Museum, Stanford University, and Hugh Merrick, collector, right.





TROPICAL BAYS of Ecuador, Colombia and Panama also are happy hunting grounds for marine collectors. The pictures above and at top of right-hand page illustrate the shoreline of Port Utria, Colombia, and are typical of this region. Below a family of Negroid residents visit an Indian native.





AN INDIAN CHILD at Port Utria poses with native paddle. Hand-hewn steps to her home on stilts, hand-hewn vessels, and a native wicker basket are typical. Indians and blacks live in peaceful harmony in the tropics. Many Negroes worked on the Panama Canal, and afterward remained to live in the jungle. In some localities the races have intermingled.





NEGROID AND INDIAN types found at Port Utria, Colombia, are shown in this group of photographs. The Indian maid below wears a rare necklace of beads and coins.





TYPICAL NATIVE VILLAGES along the coast of Ecuador are depicted here. Above are the thatched roofs of bamboo houses on stilts at La Libertad, Ecuador. Below is a beach scene at Manta, Ecuador, showing fishermen's boats hauled up high above the tidal reach. These settlements have a sort of commercial tinge sharply in contrast with primitive communities along the coast. Trade is maintained through fishing, agriculture and products of the vast rain forests. The country is rich in undeveloped minerals.





TROPICAL VERDURE in a riverside park at Guayaquil, Ecuadorean metropolis, screens the Velero III anchored in the rushing Guayas River, a great estuary which extends far inland from the Pacific. Great rafts of bananas are floated downstream from the interior to tie up alongside flimsy wharves as shown below. The river teems with traffic on the ebb and flow of swift-running tides. Guayaquil, chief port of Ecuador, is known as the "Pearl of the Pacific."



GALAPAGOS

DOWN where the Southern Cross blinks coldly at the Great Bear across a starry canopy of cobalt skies, the rugged Galápagos Archipelago sprawls along the equator, a vaguely mysterious and strangely different land, totally unlike other tropical islands or mainland shores of the eastern Pacific Ocean.

There is something curiously vital about this vast misshapen group of volcanic juttings—something extremely remote, grotesque, formidable, unconquerable.

Spanish explorers early in the sixteenth century stumbled upon the awesome group while prowling the Pacific in their stubby galleons and christened the archipelago Galápagos, after immense tortoises they found there. To famished sailors the tortoise meat was delectable. Moreover, they could take the reptiles aboard and thus keep live, fresh meat on deck for a considerable length of time.

Fresh water, found on some of the islands, also proved a boon. The starving explorers were so thankful for these things that they named individual islands after their most beloved saints. Tribute to providence must have inspired such names as San Salvador, San Cristóbal, Santa Cruz and Santa María. Another island was called Isabella in honor of the Queen, patron of Christopher Columbus.

Buccaneers and pirates later used these distant shores for refuge from their enemies; to repair their boats, and to obtain fresh supplies. Thus, from the English the islands gained another set of names, honoring a long line of British kings. Somehow they came to be known as the "Enchanted Islands," though for what reason it is hard to imagine. A modern savant was impressed contrariwise and called this land "Galápagos—World's End."

Encompassing nearly three thousand square miles of jumbled terrain, the islands are almost totally arid except for scanty seasonal rains and swirling mists that veil old craters at higher altitudes, condensing sufficient moisture on the steep slopes to support some tropical growth. It is only at the higher altitudes that growing things are green, and there is enough pasturage to support animal life. On most of the islands the lower fringes are stark desert waste, where razor-edged rubble and thorny thickets form unbelievably menacing barriers to extensive exploration.

So uninverting that they remain but sparsely settled after more than four hundred years, the islands offer almost virgin frontiers

for scientific investigation. Devoid of myths, almost without legends, and barely beginning to make history, the Galápagos comprise an amazingly fertile field for zoologists, producing many new and rare forms of life unknown on the continents.

Surrounding waters and littoral zones are alive with marine forms which are profoundly affected by the ocean currents. In this region the gigantic Humboldt Current, which sweeps northwestward out of the Antarctic along the shores of South America, diffuses itself in a broad swing westward into mid-Pacific along the equator. Warmer tropical currents out of the Gulf of Panama also play a part in the ever-changing oceanic phenomena of the area.

There are ten large islands in the group and innumerable smaller islands and islets covering an area approximately 180 miles wide and 200 miles long. Because the Spanish named them first and the English afterward, most of the islands bear dual names, even on modern charts. We use the English names.

The largest is Albemarle, with the contour of a wrinkled old sock which has fallen from the wash line to the ground. It is 75 miles long and the foot about 50 miles wide. Five giant volcanoes spewed up from the bottom of the ocean and their lava flowed together in a tremendous jumbled mass, forming Albemarle.

Just to the west of Albemarle stands Narborough Island, almost a part of its neighbor. A narrow channel separates the two, and Tagus Cove, on the Albemarle side, forms a fine anchorage. To the north and east of Albemarle is James Island, so recently volcanic that one never can count all the cones and fumaroles in passing. A little further to the east and south is Indefatigable Island, some 30 miles in diameter. Almost directly south of the last named is Charles Island, most famous of the group because of repeated tragedies that have marked efforts to settle on her shores.

Chatham Island, the seat of government, lies to the southeast of Indefatigable. East of Charles and south of Chatham is Hood Island, southeasternmost of the group. Smaller in size, but still immense and most desolate are Tower, Bindloe and Abingdon Islands, lying from east to west in the order named. There are dozens of other islands and islets, the best known being North and South Seymour, Barrington, Duncan, Jarvis, and the Daphne Islands. Only a few support animal life.



SYMBOLIC of the Galápagos are the exotic fork-tailed gull and the giant tortoise. These two natives of the archipelago figured in early history of the islands. While the gulls *Creagrus furcatus*, persist and seem likely to survive fierce competition for existence, the giant Galápagos are all but extinct for they have been the prey of man for more than 400 years. Early Spanish explorers named the archipelago after the immense tortoises which provided famished sailors with a welcome food supply. Herbivorous reptiles, the tortoises lived on land and were easily captured. Thousands were taken by greedy mariners. Different species are known from different islands.



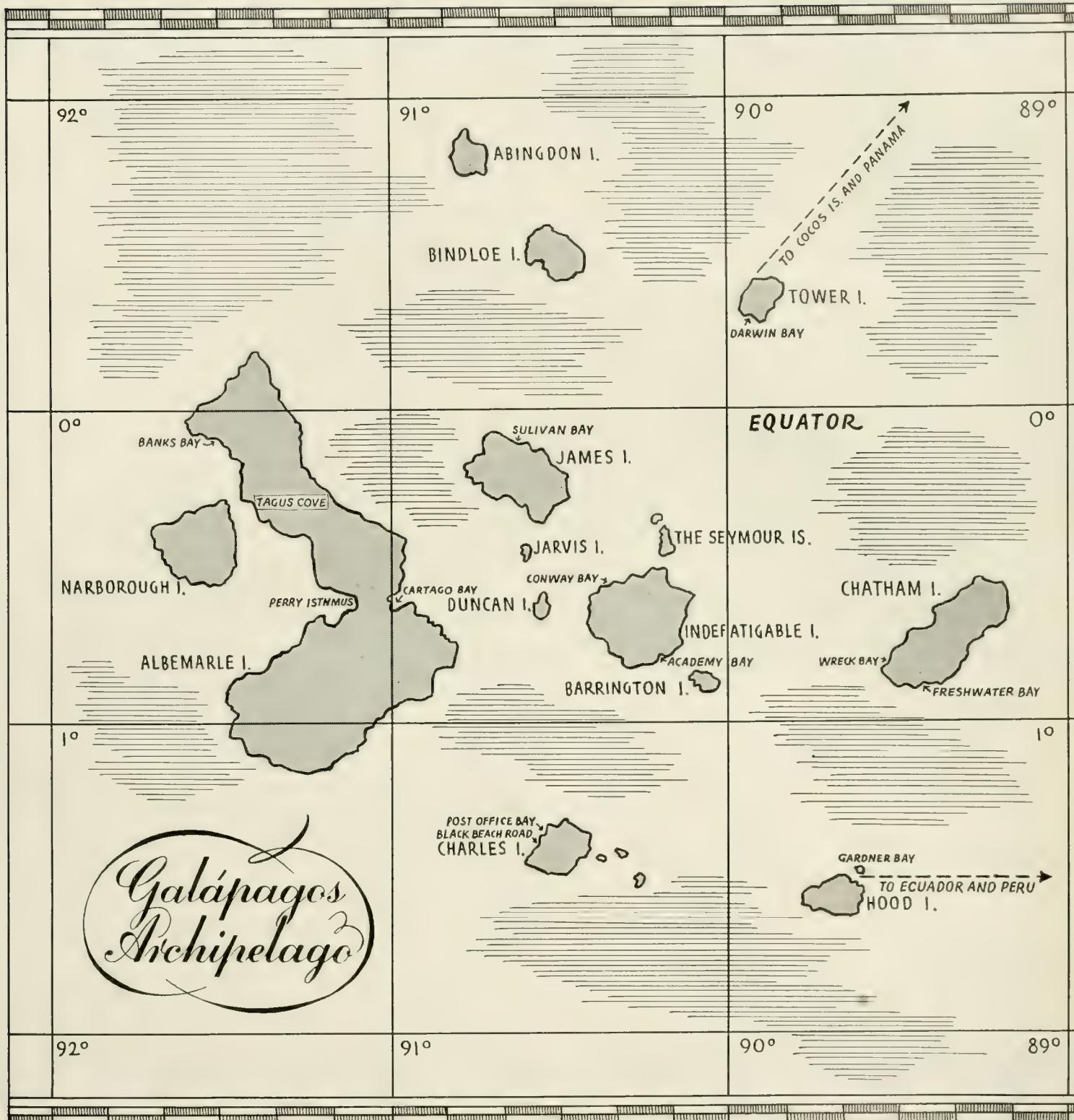
GARDNER BAY on the north-eastern shores of Hood Island provides a bit of awesome scenery typical of the Galápagos Archipelago



BROAD SANDY beaches such as this one at Banks Bay, Albemarle Island, are rather rare in the Galápagos Islands. Of volcanic origin, the group is mostly mountainous, rough and formidable. Lava reefs make approaches to the island hazardous.



EL CAMINO de la Muerte (Highway of Death) is the grisly name given to one trail crossing Floreana Island. It is marked by bleached skulls of wild bulls



PRINCIPAL ISLANDS of the Galápagos Archipelago are indicated in their proper relationship on the chart above which bears the nomenclature of English buccaneers. The islands are spread over an area roughly 150 miles in diameter. The major islands lie just under the equator. Albemarle, approximately 75 miles in length and nearly 50 miles across the foot, is the largest. After more than four centuries the islands even today have hardly been explored.



MOLTEN LAVA flows into the sea from the slopes of rugged Narborough Island in the Galápagos Archipelago, sending great white clouds of steam hissing skyward from the water's edge. In the photograph above members of the 1927 expedition on the Oaxaca approach the sizzling cauldron as near as intense heat will permit. The distant view below shows a long reach of the island shore bathed in lava from volcanic eruption. Along the shore members of the expedition found thousands of fish killed by the heat, steam, sulphurous sedimentation or sub-sea disturbances. Although volcanoes on the major islands have since lain dormant, vents continually pour forth fumes and steam.



SCALY REPTILES which may have descended from prehistoric species are principal inhabitants of the low, flattened and desert-like Galápagos Islands called South Seymour and North Seymour on the charts. *Conolophus subcristatus* is a colorful creature which subsists chiefly on cacti and sparse grasses.



VISE-LIKE JAWS of land iguanas are used to crush cactus leaves or throttle enemies. They can inflict serious damage. Menacing claws also are lethal weapons. Usually docile and lethargic the reptiles are captured by hand. Once aroused they become extremely agile. This one tried to tweak the nose of Cyrus B. Perkins.

BROAD-LEAF CACTUS is stripped of leaves as high as the land iguanas can reach. A spineless form of *Opuntia* is found in the Galápagos, too! If Luther Burbank had only known he might have saved himself years of labor in an attempt to produce a similar spineless plant in his California gardens.



CAMOUFLAGE is pronounced among land iguanas of the Galápagos. Scale patterns and their coloring blend amazingly with the terrain where they live. A long cactus spine protrudes from the throat of this specimen. Sharp points of similar spines have been found in the flesh of these hardy reptiles, and apparently cause little damage.

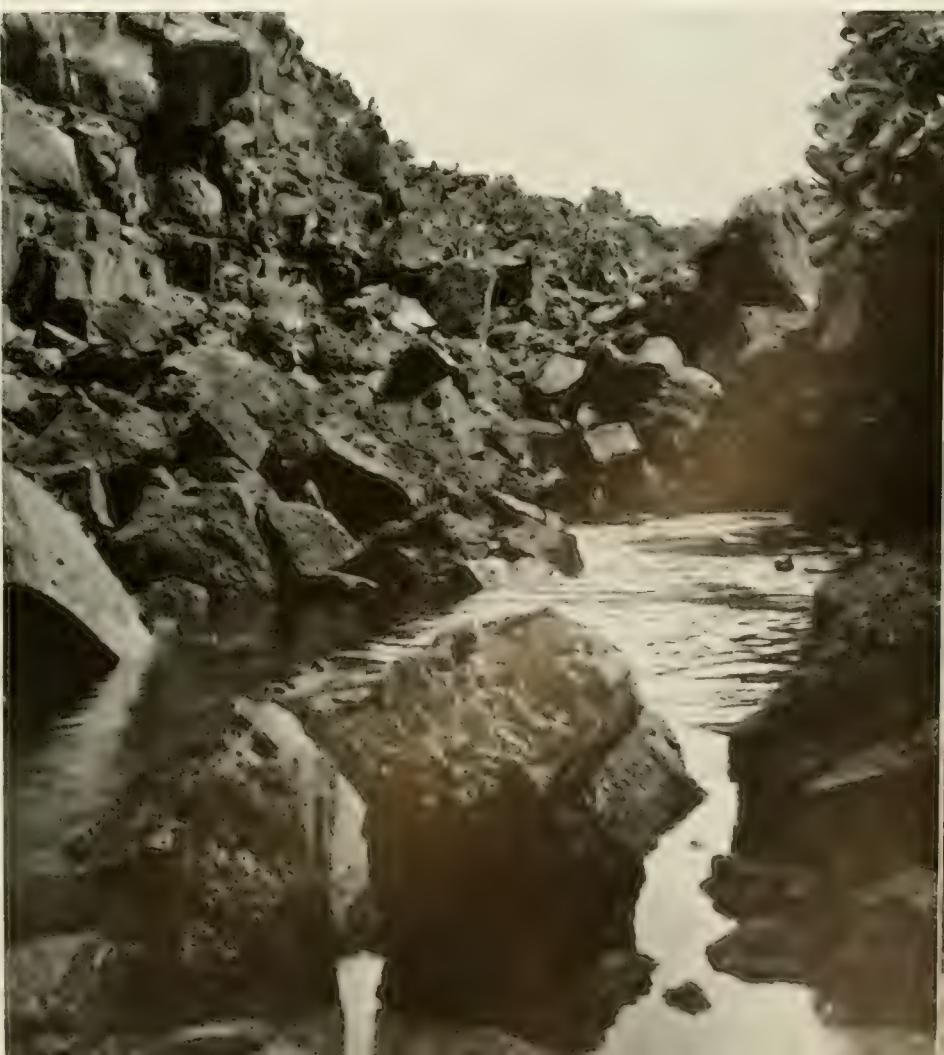


MARINE IGUANAS resemble their land-lubber cousins in form but not in color. They are a brownish black and blend into the lava rocks and reefs so effectively that they are difficult to find. They are more numerous and more widely distributed among the islands than land iguanas. Amphibious reptiles of fearsome mien and unusual habits, the sea iguanas feed on marine vegetation of tidal zones. Efforts to keep them alive in captivity have failed because they are champion hunger-strikers. Land iguanas, however, are easily weaned from cactus to such delicacies as lettuce and bananas. They thrive in captivity. This splendid specimen of marine iguana, *Amblyrynchus cristatus*, comes from Tagus Cove, Albemarle.

RAREST OF SEALS is the sleek Galápagos fur seal, long thought to be extinct, but recently rediscovered in a small tidal pool at Darwin Bay, Tower Island. The ferocious old bull at the right is undisputed ruler of the rookery.



HIGH ROCKY WALLS of the pool afford a sunny shelter for the dozing female at left whose specific name is *Arctocephalus galapagoensis*.



WITHIN CONFINES of this deep but narrow pool a few more than a score of the rare Galápagos fur seals thrive. Once they numbered hundreds of thousands but they were slaughtered ruthlessly by sealers for their fur and oily blubber. Now they are protected.



MAN O' WAR birds are found in great numbers among tropical islands of the eastern Pacific. With the greatest wing area for their weight of any bird, they are champions at soaring. Nesting in low bushes, they are unable to get into the air except against a breeze. They never alight on the water for they would be unable to rise again. As harpies of the skyways, they frighten other birds into disgorging their catches of fish and make spectacular dives to recapture the meal before it strikes the water. These are close-range photos of *Fregata magnificens*.





DARWIN BAY on Tower Island was formed when the side of an ancient volcano blew out and the sea flooded a mile-wide crater. There are ledges and reefs around edges of the bay but none has plumbed bottom in its abyssal center. Thousands of marine birds nest on the island. The remarkable picture at left shows a hungry Man o' War snapping a shiny anchovy from the water with its long beak and illustrates how this marine bird subsists on fish

without alighting upon the water. The male of the species has a wattle-like pouch on its breast which it can inflate like a toy balloon.



DOWNTY NESTLING of the Man o' War, right, is all beak and eyes as he perches on his scanty nest of sticks and reeds. The young are fed by their parents until they acquire full plumage and are ready to fly. Below, a pair of blue-faced booby birds, *Sula dactylatra granti*, prepare their nest on Tower Island.





DARWIN BAY is partly fringed by rocky escarpments as shown in this view taken on the 1927 voyage of the Oaxaca. Volcanic vents fringing the near side of the bay still gave forth sulphurous fumes in 1938. In making their nests the booby birds, as shown below, clear a small space of sticks and stones. In the tropical heat they sometimes stand over their eggs, shading them to keep them cool, instead of hovering to keep them warm.





FEARLESSNESS of most birds in the wild Galápagos Islands is demonstrated above by Dr. Edwin O. Palmer, ship's surgeon on several expeditions. Usually the birds are heedless of man. At right is a Galápagos penguin from Tagus Cove, Albemarle Island. Below is a typical nest of the Man o' War bird with its single egg. Boobies often have three nestlings of different ages to care for at one time.



GALAPAGOS HISTORY

GEOLOGISTS ATTACH great antiquity to the Galápagos Archipelago, but there is no evidence that early man knew anything about the islands. Unlike mainlands of the Americas, the Galápagos fail to provide archaeologists with relics of the handiwork of man from which history might be reconstructed.

There are legends indicating that adventuresome South American Indians may have visited the islands centuries ago, but they were not the sort to voyage afar in crude aboriginal craft, although they ranged afoot over great distances on land.

Exploration in the Galápagos has been so limited that historical conclusions should not be reached. However, it seems reasonably certain that Spanish explorers of the sixteenth century were the first to view the awesome terrain of this remote land. Surely they were amazed at the flora and fauna encountered. Strange reptiles and birds such as they had not seen before greeted their gaze as they scouted chaparral wastes. Huge tortoises and fearsome iguanas unknown elsewhere in the world must have filled the wanderers with apprehension which vanished only when they found the beasts edible. Meat of the reptiles is often called tasty.

In desperate straits from hunger, thirst, exposure, and disappointments, the roving seamen must have rejoiced upon finding land where there was food and fresh water. There is evidence that some of the explorers, or the later pirates and buccaneers, left parties on shore perhaps for long periods of time. Other early settlers may have been castaways or deserters. At any rate, some of the older plantings on the islands are supposed to date back to swashbuckling days. There are a great many old fruit trees.

Indefatigable Island boasts a large and long neglected plantation of a species of agave resembling the century plant. Tradition has it that pirates of old intended to use fibre from the plants in the making of rope. It is possible that early visitors to the islands also may have planted some South American trees found there.

The earliest effort at serious agricultural enterprise is accredited to one General Baldesar who established himself on a high plain of Charles Island probably a century ago. He planted an extensive grove of citrus and tropical fruit trees; introduced domestic animals which since have reverted to wild types, and probably developed gardens on his wilderness hacienda.

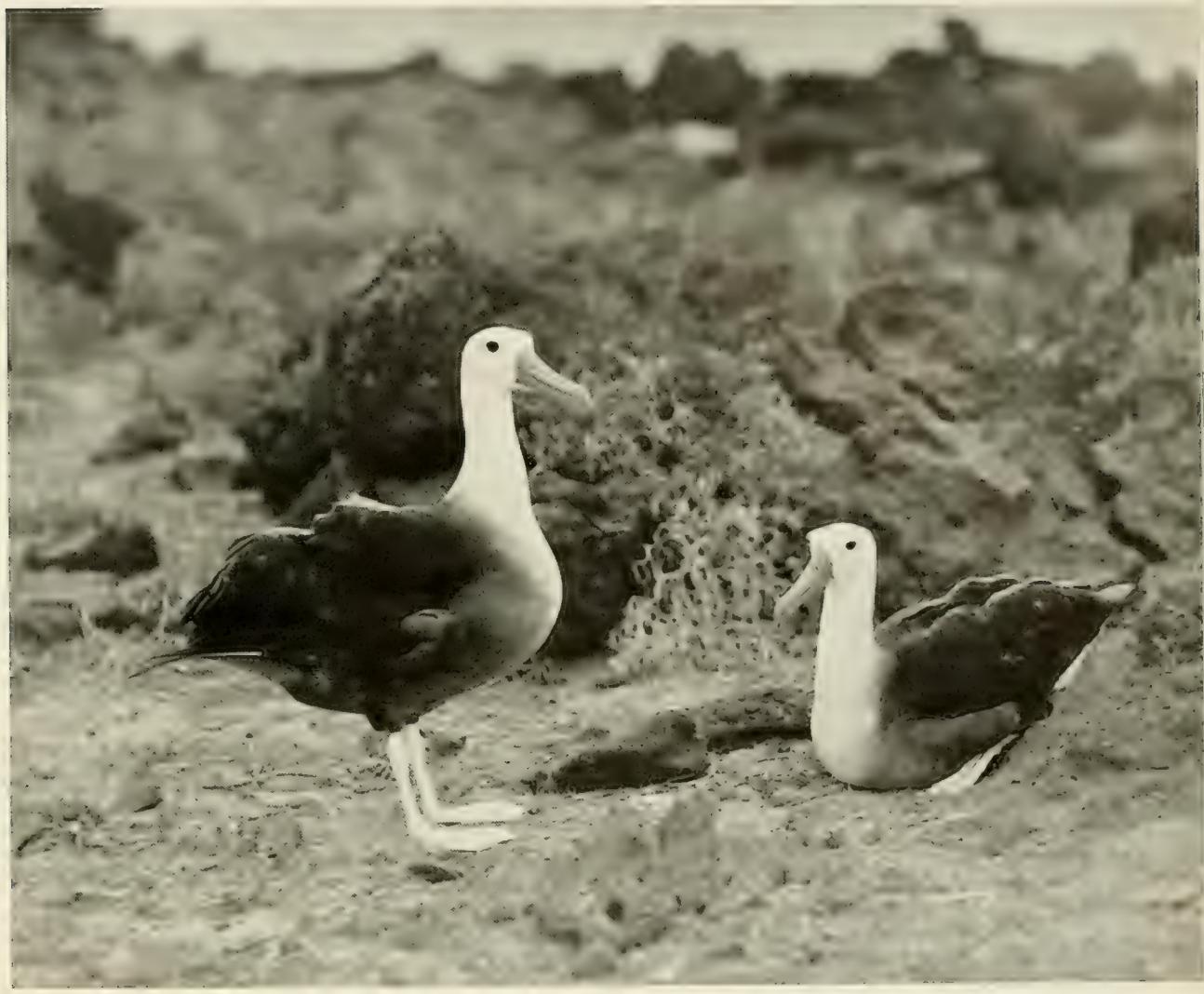
General Baldesar, like so many others on Charles Island, came to an untimely end. He was murdered by his peons. Those who survived subsequent privation and hardship eventually were returned to the mainland. The great citrus groves have since been reclaimed by the jungle. It is startling in the midst of thorny, moss-hung thickets to come upon trees bearing large fruit of brilliant hue and luscious flavor.

Since 1832 the Galápagos have been a territorial possession of the Republic of Ecuador. In the past century several attempts at colonization have been made. Once the government established a penal colony which was short-lived. A Norwegian colonization project on Charles Island came to an unhappy ending. Cattle raising has had its ups and downs on Albemarle, Chatham, and Charles Islands. Agriculture is taking the place of animal husbandry.

Probably the most active enterprise in the islands in recent years has been the Rancho El Progreso on Chatham Island, where an early Spanish settler, Manuel Cobos, established an hacienda. Fruit, produce and cattle thrived on the rancho. An old sailing vessel transported the products to the mainland. Since claimed by the government of Ecuador, the old vessel was rechristened the San Cristóbal, and it still plies between Wreck Bay and Guayaquil. The rancho, too, is a government subsidy, and settlement of the islands has become a national enterprise.

For more than a century the Ecuadorian government has made sporadic efforts at colonization but it was not until 1937 that any direct program was undertaken. Military outposts were established at Wreck Bay on Chatham Island and Academy Bay on Indefatigable Island. It was apparently the desire of the government to bring erstwhile residents under some semblance of protection and afford new colonists opportunity.

But distances are so great and the terrain so formidable that control of the island populace is an extremely difficult task for the military police. Ecuadorians usually are loyal. Most trouble arises from the exploits of adventurers and vagabond sailors. The four largest islands are the only ones regularly inhabited. Others remain almost virgin territory which has been explored but little. In the Galápagos one could travel for days, perhaps for weeks and months, without encountering a human being.



COURTING DANCE of the great waved albatross of the Galápagos is one of the most fascinating and yet ludicrous phenomena known to ornithologists. These photographs show two phases of the dance as taken in motion pictures on Hood Island, four miles from Gardner Bay, location of the only known breeding place of these rare birds, *Diomedea irrorata*. Males of the species strut and waddle in eccentric fashion, returning to address the female like a soldier at salute. Then they thrust their long beaks skyward like rapiers; bring them down to one side, touching the wing coverts; parry and plunge into a lightning-like fencing foray, rattling their beaks like experts with the foils. The routine is repeated time after time with little variation, always to the count of three.





GALAPAGOS HAWKS are extremely rare birds and the feat of photographing them in their natural habitat on Hood Island is even rarer. While most Galápagos birds feed on fishes at sea, the hawks are carnivorous, robbing nests and preying on small reptiles and rodents. Below are Ecuadorian fishermen encountered on the island on one voyage of the *Velero III*. The fishermen had sailed more than 600 miles in search of adventure and fish. They found more of both than they had bargained for and welcomed water and supplies from lockers of the exploration craft. Some natives still file their teeth, as illustrated at right, in the belief that it makes the dentures more efficient.





SULIVAN BAY on James Island in the Galápagos is memorable for its rugged shoreline, suggestive of Dante's wildest dreams of an inferno. The fishing smack *Falcón* is shown at anchor. Her Norwegian skipper, Christian Edvardsen Estampa, at right below, has been a colorful figure in the Galápagos for many years. With him is Arne Graffer, another Norwegian from Academy Bay, Inde fatigable Island. Graffer's sons, Arne and Erling, are shown at left.



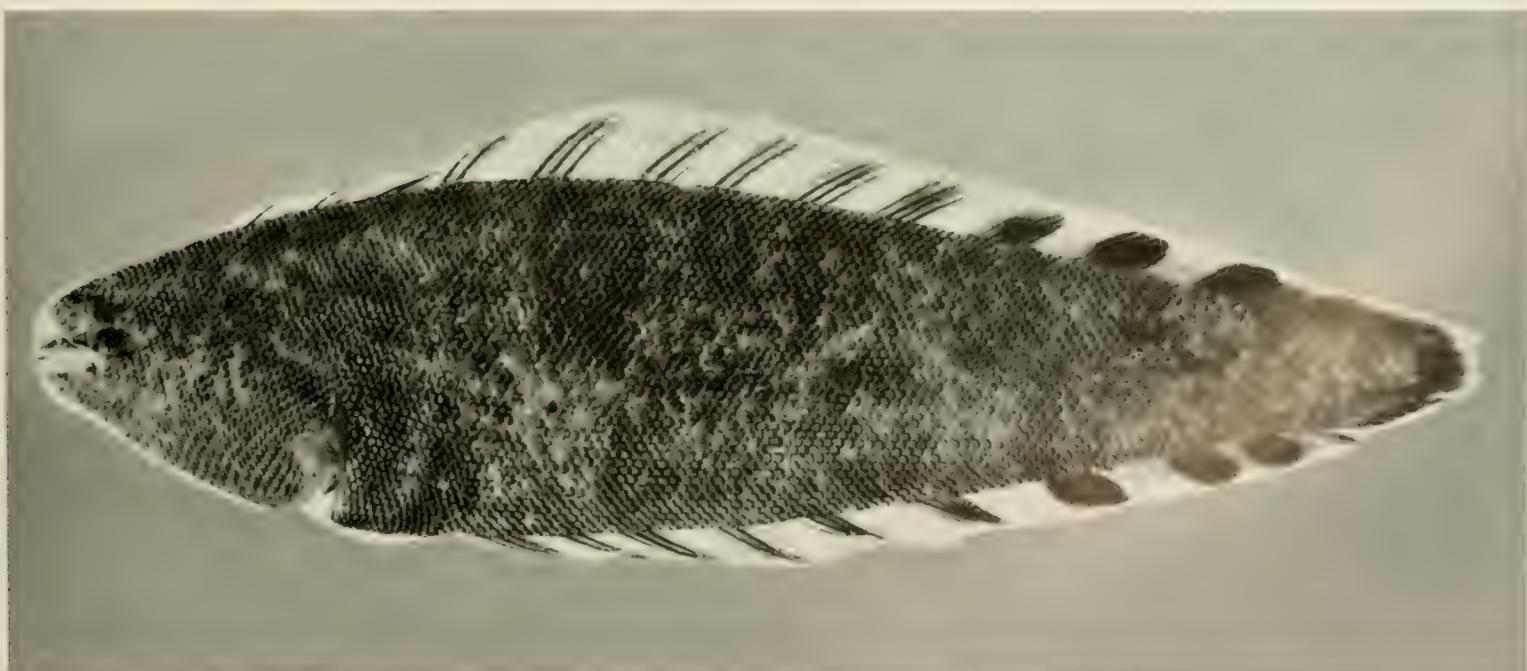


CARTAGO BAY lies just above the heel of the giant foot of land which forms Albemarle Island. It affords marine collectors an amazing variety of life ranging from microscopic forms to immense Manta Rays like the one pictured above, being hoisted aboard the Velero III. There's a native tradition that the giant rays will wrap their wings around a small boat and dive for Davy Jones' locker. This has not been demonstrated but one could easily swamp or capsized a skiff. It took eight hours to land this specimen. The capture made interesting motion picture material. Below are some tropical fishes.





FANTASTIC FISHES are common in waters surrounding the Galápagos but none is so rare as the *Antennarius* above whose fins serve as feet while he clammers about in rocky tide pools like a clumsy toad. Splotches of color in exotic hues afford him an almost perfect camouflage. He dangles a little antenna with a bulbous tip in front of his nose and gobbles down any curious little fishes attracted by the lure. Below is an odd flat fish of the family Soleidae, *Syphurus atramentatus*.





NARBOROUGH ISLAND is one of the most remote and probably the least explored of the Galápagos group. Wreck of the tuna fishing boat Radio on Narborough is shown above. Below an expedition cameraman is filming species of marine life in a shallow tide pool, using special equipment.





ALBEMARLE ISLAND was formed by the mergence of five immense volcanic cones. Just above Cartago Bay lies a tremendous lava flow which may once have been a molten lake. Its fissures, cracks and vents still reek of sulphurous fumes, but here and there cacti find a foothold.





COMANDANTE Carlos A. Puente, Governor of the Galápagos, Archipelago de Colón, Republic of Ecuador, 1938.

THE VILLAGE OF CHATHAM on Wreck Bay, Chatham Island, is the seat of government in the far-flung Galápagos Archipelago. Ashore is the only light-house in the islands and the only radio station in this area of the eastern Pacific Ocean. The islands have belonged to the Republic of Ecuador since 1832.

Between Wreck Bay and Guayaquil, the sturdy old schooner San Cristóbal plies its way on an irregular schedule of four to six weeks. The vessel serves the people of the Galápagos, bearing supplies to the settlers and carrying their produce to the mainland. Most of the island products come from the Rancho El Progreso, high on the slopes of Chatham Island. The rancho probably was the earliest settlement in the islands and once was the site of a prison camp.

Everyone in the islands knew or has heard of a hardy old pioneer named Cobos who developed the Rancho El Progreso as a private enterprise. He once owned the schooner, too. It is a picturesque old craft, and the decks usually are crowded with passengers who find a certain excitement in vacation voyages from the mainland to the enchanted islands. Accommodations aboard have changed but little in sixty years and the atmosphere is one of pioneering and adventure.

Now in the service of the government, the San Cristóbal is used chiefly to supply military outposts on Chatham and Indefatigable Islands. To North Americans it is rather unusual that the outposts are made up of cavalrymen. Ecuadorians are great horsemen. But ashore or afloat their spotless white uniforms, black cavalry boots and jaunty blue caps contrast sharply with the rough garb of settlers and the rugged terrain of the islands. Instead of the hurricane deck of a horse, to which he is accustomed, the Governor of the Galápagos now sits stiffly athwart a chugging dory bounding over the waves of Wreck Bay when going out to greet visitors.



WRECK BAY is served by an old wooden pier surmounted by two streaks of rusty rails which were used by a narrow-gauge steam railway in the heyday of Rancho El Progreso. Wood pilings and rough hewn planks used in its construction are remarkable for their hardness and seeming imperviousness to the ravages of time. Pilings are singularly free from barnacles, algae and other forms of marine life. Natives say the wood comes from a Matasana tree found on Indefatigable Island, and interpret the name literally to mean "kill the healthy." Below is the San Cristóbal at anchor in the bay.





AN OLD FISHING SLOOP was salvaged by the Ecuadorians at Wreck Bay to serve as a port launch but they lacked tools properly to install a new American motor and fittings. Workmen from the Velero III (below) gave a hand and completed the job in short order.





KÜBLER AVIARY erected in their garden at Academy Bay utilizes the carapace of a giant tortoise as a roof. Margarita Kubler and daughter Carmen, aged 10, beside it.

ECUADORIAN FLAG now flies over the home once occupied by R. H. Rader, adventurer, at Academy Bay, Indefatigable Island. Called Piedras Negras by its former owner, the house is now occupied by an officer in charge of the military outpost. In a nearby cottage live Karl Kübler, his wife Margarita, and their little girl Carmen, shown below as they appeared in 1938. World travelers, the Küblers settled in the Galápagos in 1934





MAROONED FISHERMEN found at Academy Bay on one of the Hancock Expeditions had been forced to abandon their boat at Gordon Rocks, Indefatigable Island, and suffered gruelling privation and exposure making their way four miles to the settlement. The fishermen were taken aboard the Velero III. Provided with food, clothing and necessary supplies they were taken to Gordon Rocks where their craft was salvaged and towed to the safety of Wreck Bay, Chatham Island. Their boat, hardly seaworthy, is shown at right below. Numerous incidents of succor at sea are found in the log of the Velero III for it visits many remote places where ill-equipped craft are most likely to get into trouble. Below, at left, are Mr. and Mrs. A. Worm-Müller, former residents of the settlement at Academy Bay.



FLOREANA

THEY CALLED IT their Garden of Eden, but in it they found only back-breaking drudgery, a continual battle for survival, and finally bitterness, intrigue, misery, jealousy and death.

With fond hopes of gaining lasting satisfaction and happiness from the pursuit of philosophical and psychological studies amid the bleak isolation of Charles (Floreana) Island in the Galápagos, Dr. Karl Friedrich Ritter and his mate Frau Dore Strauch von Koerwein set themselves upon the island shores in 1929. There they built their Hacienda Friedo—a combination of their names—and lived until the latter part of 1934. Then violent death took Dr. Ritter. Grief and bitterness possessed Dore.

From Black Beach anchorage on the westerly side of Charles Island a dusty, rough and winding trail leads upward along volcanic mountain slopes to the Ritter place. It is a tortuous way, through desert scrub, leafless bursera, and cacti with unbelievably long and sharp spines.

On the lower edge of a broad pampa, ever so much like the African veldt, a little spring trickles from the hillside beneath a wild tangled grove, and forms an oasis. It is a steep climb from the beach to the Ritter plantings. Once there the traveler is most impressed by the tremendous amount of labor that went into the making of this garden spot.

One finds more than fifty varieties of food-bearing trees, shrubs, vines and plants which were tenderly nurtured by this modern Robinson Crusoe and his mate. Most of them are tropical or semi-tropical plants, and some are extremely rare. Friedo had no lack of fresh fruits and vegetables throughout the year. And the island is alive with wild cattle, wild pigs, donkeys, dogs and cats, left there by early Spanish settlers. The animals have reverted to wild types and through inbreeding have deteriorated in size.

Ritter used native trees for timbering and salvaged corrugated iron for roofing in roughly erecting a spacious lean-to shanty with the open side facing the sea. Split bamboo was used largely for walls and flooring. Chairs, tables and other furnishings were constructed in rustic fashion from native woods.

They tamed wild burros which carried heavy loads for them; raised chickens and turtles; fought rodents and wild birds; and built fences to keep out wild pigs and cattle that foraged in their

gardens; often contaminated their water source. Animals were a nuisance, for these hermits were almost exclusively vegetarians.

A little waterfall below the spring provided them with a natural shower bath. One of their many annoyances was a shortage of soap. They had not learned to make it. Garden tools were continually breaking, but Dr. Ritter had a grindstone and an anvil; a few necessary tools for repair work, a certain ingenuity and indomitable will to conquer the wilderness.

As time permitted, he wrote in a philosophical vein, but without much orderliness. Some of his philosophy of isolation has been preserved in letters and in Dore's book "Satan Came to Eden." She was not speaking of serpents or apples, nor even horned and hoofed devils, but of human intrusion upon their solitude *à deux*.

Heinz Wittmer, another German escapist, arrived on the shores of Floreana in August of 1932 accompanied by a blonde young woman whom he affectionately called "Greta," and a slender stripling of a lad, Harry Wittmer. Margaret was the name of the comely companion of Wittmer who so casually deserted Europe to struggle for existence in a thorny wilderness.

For a time the Wittmer abode was established in pirate caves strangely hollowed by nature in the face of towering cliffs bordering a grassy, brush-grown mesa high on the slopes of a broad shelf joining two volcanic cones. Gradually they managed to construct a home from stones and salvaged lumber.

Rolf Hans—first white child born in the Galápagos Islands—came to brighten life at the Wittmer hacienda just at the close of the "garúa" season on the first day of 1933. A little girl, Ingeborg Floreana, was born April 18, 1937.

The Ritters and Wittmers seem to have gotten on well enough as distant neighbors until the arrival at Postoffice Bay in October, 1932 of the Baroness Eloisa Bosquet von Wagner. She was, she said, of the Viennese nobility, latterly from Paris, whence she voyaged to the Galápagos with two male companions, Alfred Rudolf Lorenz and Robert Philippson. In her retinue too, was Felipe Valdevieso, an Ecuadorian youth engaged to help the Baroness enforce her proclaimed intention to establish herself as Empress of the Galápagos. The newcomers carved out an hacienda near the Wittmers on the slopes of the highest volcanic cone of the island.



PHILOSOPHICAL ESCAPISTS were this Germanic pair whose idyllic existence on Charles or Floreana Island in the Galápagos was rudely shattered by the intrusion of tragedy. Above are Dr. Karl Friedrich Ritter and Frau Dore Strauch von Koerwein as they appeared in their island Eden, Friedo, in 1932. Below is a view of the island.





RITTER DOMAIN on Charles Island covered seven and a half acres, of which approximately one-third was vigorously cultivated. Near the center of the clearing was the ramshackle home constructed of roughly hewn timbers and roofed with corrugated sheet metal, mostly salvaged from an abandoned Norwegian colony at Postoffice Bay. The mild climate permitted Ritter and Frau Dore to live in comfort though their house was open on the north. Frau Dore is shown in front of the structure with a pet baby burro



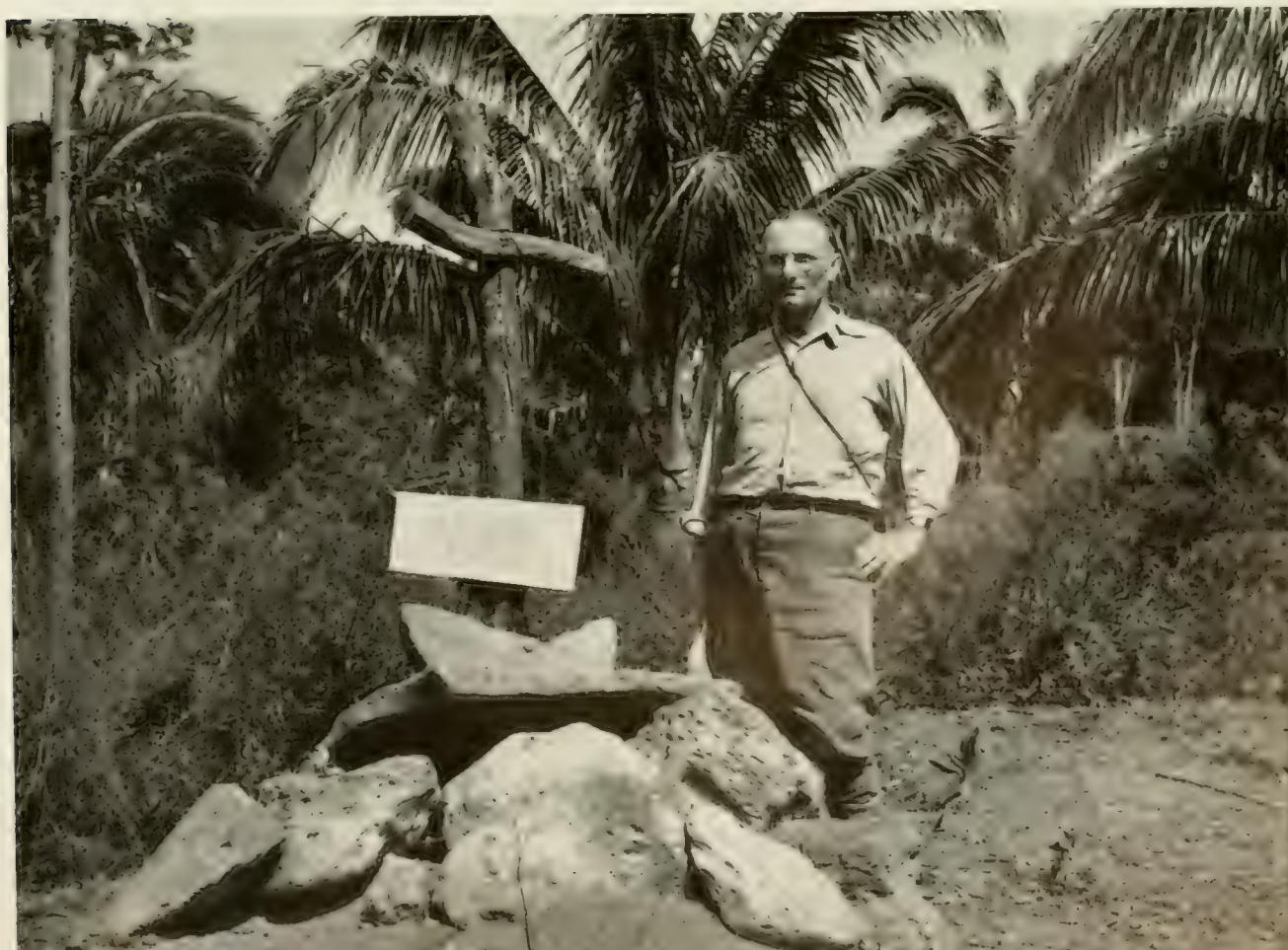
SINCE THE DEATH of Dr. Ritter November 21, 1934, the Ritter home has been dismantled by other islanders and everything useful taken away. Gardens and groves, however, have been carefully tended by successors to the Ritters for they comprise an important source of food supply



FRAU DORE was found alone and desolate in her tropical home a few weeks after the death of Dr. Ritter and pleaded to be taken to the mainland where she might transship to Germany, her homeland. She was taken aboard the *Velero III* to Guayaquil. Upon her return to Europe she completed and later published her sad epic of the Galápagos, "Satan Came to Eden."



VELERO VOYAGEURS rest beneath spreading branches of a great Galápagos plum tree, Spanish Ciruela, on the Ritter plantation. The trees evidently were planted by pre-Darwinian settlers in the islands. Below, Captain Hancock pays tribute to the memory of Dr. Ritter, whose grave is marked by a pile of stones and a rustic cross bearing a name plate.





MOST COLORFUL figure in recent history of the Galápagos was the self-styled Baroness Eloisa Bosquet von Wagner who reached Charles Island late in 1932 with three male companions and proclaimed herself Empress of the Archipelago. Her imperious manner led to bickering and strife and many strange tales of her conduct are recounted by those who came in contact with her. Coming from Paris, France, the Baroness was accompanied by her erstwhile favorite; blond, emaciated Alfred Rudolf Lorenz. Two other stalwart young men of adventurous spirit, Robert Philippson and Felipe Valdevieso, also accompanied the Baroness. The entourage set up a camp in the old pirate caves near the Wittmer hacienda; gradually succeeded in constructing a crude shanty of boulders and timbers and developed productive gardens. The picture of the Baroness above was taken in her rock garden in 1933. Habitually she wore halter top and shorts fashioned from jeans.

HAUGHTY and domineering, the Baroness is shown on her hacienda with Philippson, who became her favorite after Lorenz weakened from toil and bitter strife in the wilderness.



THEY CALLED IT Hacienda Paradaíso but the inscrutable smile of Alfred Rudolf Lorenz in this photo taken in 1933 seems to tell something of the bitterness and hardship which resulted in tragedy a year later.





TRAGIC FATE of Lorenz is symbolized by the flag of distress fluttering above bleak, parched sands of barren Bindloe (Marchena) Island. Lorenz and Trygve Nuggerood, a Norwegian fisherman, vanished in the latter's sloop, the Dina-mita, enroute from Academy Bay to Wreck Bay on July 13, 1934. Their dehydrated bodies were found on Marchena's shores November 17, 1934. They died of hunger and thirst amid untold suffering. With them when their craft was driven from its course by swirling currents was José Pasmino. Neither Pasmino nor the Dicamita have been seen since. Mariners assume the ill-fated boy was swept far out into mid-Pacific by the irresistible Humboldt current.





GRUESOME reminders of tragedy are the bodies of Alfred Rudolf Lorenz, above, and Trygve Nuggerood, right, as they appeared when found on Marchena Island.



LEFT BEHIND were Mrs. Nuggerood and her baby, innocent victims of a frontier life beset by mysterious dangers. Unfinished chapter of the sad saga of the Galápagos is the inexplicable disappearance of the Baroness von Wagner and Philippson from their Floreana hacienda. They were last seen on the island in March, 1934. Those who knew them best say these two were murdered beside some island trail





POST
OFFICE
BOX.

BARREL POSTOFFICE on Postoffice Bay, Floreana Island, stands as a memorial to the many tragedies of the place. At one time it was only a weathered keg, but visiting mariners have rebuilt and painted it so that it bears something of the dignity to which its history entitles it. Visiting ships leave or pick up mail at irregular intervals ranging from a week to a year. Since the island gained so much notoriety after the short-lived reign of the Baroness, ships stop more often if for no other reason than to satisfy the curiosity of travelers. Due to the island's inglorious history, perhaps, the Ecuadorian Government for a time established a seat of authority at Black Beach Anchorage and appointed Señor Ezequiel Zavala as the Governor's representative to watch over settlers there. Señor Zavala and his wife are shown below with their faithful burro, Fifirichi.





OLDEST RESIDENTS of Floreana at last reports were Heinz Wittmer, another German escapist, and his mate Margaret, comely young hausfrau who has borne two children to Wittmer in their island retreat. Rolf Hans, in his father's arms, above, was the first white child born in the Galápagos. Harry Wittmer, born of an earlier marriage, is seen in shorts and sandals. Ingeborg Floreana, in her father's arms, below, is the couple's second child, born April 18, 1937. Such isolation affords no doctors, nurses or even midwives so Wittmer aided his pretty wife in her confinements. The children are normal and healthy.





MODERN COMFORTS are not lacking in the Wittmer household high on the semi-tropical slopes of Floreana. But the accoutrements of civilization are almost wholly due to generosity of visiting voyageurs. The Wittmers, however, have worked tirelessly to improve their condition of living. They have a stone house and wonderfully productive gardens. To visitors they seem happy, almost to the point of complete contentment. At right they are seen in their tropical plantation. They grow many varieties of fruits and vegetables.





NEWEST RESIDENTS of the jungle on Floreana's heights are the Americans, Elmer Ainsley Conway and his wife, Frances, who left California to take up an adventurous existence in the Galápagos in May, 1937. Conway was a newspaper man and writer of fiction. His wife formerly taught school in Redlands, Calif. They cleared an acre of ancient citrus jungle and set up housekeeping in a tiny shelter. In January, 1938, they appeared happy with their lot and determined to win existence in the open.



PARADAISO

THE HEIGHTS of Floreana are almost continually bathed in swirling mists. Rainstorms are rare. When the mists become heavier than usual and the wind blows, the storms are known as *garúas*. Mists veil the equatorial sun. Chill waters of the great Humboldt Current cool the air and then it seems incongruous that one could become so miserably cold just under the equator. Fortunately the wet season is short.

Were it not for the moisture of the *garúas* and the ever-present mists, the Galápagos would be uninhabitable. In truth some of the islands and islets are totally devoid of fresh water. These support only scanty desert life. At lower altitudes, to which the mists rarely descend, all the islands are desert-like. Some are so thickly grown with desert scrub as to be almost impenetrable. Small wonder that the Galápagos have hardly been explored at all!

On the higher mountain slopes one finds a different world. Moisture is sufficient to support dense tropical vegetation. Some of the islands boast enormous hardwood trees. There are jungles of tropical and semi-tropical fruit trees. Mosses, lichens and other epiphytic plants typical of the rain forests are to be found in profusion. Orchid-like bromelias in season flower overhead. Ancient citrus groves at blossoming time shed their perfume on the breeze.

Peaks and high mesas of the mist-laden islands collect enough moisture to create a few straggling springs of water and these provide means for residents to irrigate their gardens. It is possible to grow almost any vegetable or fruit in different locations, particularly on Charles and Chatham Islands.

It was in such a setting that the isolationists of Floreana sought happiness and release from civilization. They could count on the climate and the processes of nature to keep them alive, but human frailty brought tragedy to live among them. Jealousies and thievery promoted hateful strife. None were bound by rules of conduct to which they were accustomed in communal life. Each tried to create his own world in a space too small for any such experiment, even though there is a vast expanse of land.

How the Baroness von Wagner struck upon the name Hacienda Paradaíso never was explained. Probably it was suggested by one of her masculine aides. They were not scholarly. Doubtless it was intended to convey the idea of a sort of paradise, but the Spanish

for paradise is paraíso. Perhaps the extra "da" became an imperious fetish. The Baroness was a forceful, colorful non-conformist. Whether her claim to the Viennese nobility was well founded, those who knew her best found no occasion to question her. In the eighteen months of her reign she succeeded in focusing the attention of an incredulous world on a tiny dot in the Pacific.

Just what she really thought and felt and did during that brief but hectic time on Floreana may never be known, for the erstwhile Empress of the Galápagos left no memoirs. Whatever accounts have been written have been colored by jealousy or hate, or based upon misinformation. She arrived at Postoffice Bay with her little entourage on October 15, 1932. The Baroness and Philippson vanished unaccountably about March 28, 1934. Mystery still veils their fate.

There seems to be no question in the minds of those nearest the picture but what these two were slain. What facts are known could add up to nothing else. But one cannot be too certain of death without being able to produce the corpus delicti. Those who possessed real facts are dead. Lorenz died of starvation and thirst on Marchena Island in flight from Floreana. Dr. Ritter died in agony at Friedo four days after the finding of the bodies of Lorenz and Nuggerood, but at the time he had no knowledge of their fate.

Cold, silent, relentless, the great Humboldt Current wrote finis to the saga when it swept to his death the only man who knew intimately life as it was lived at the Hacienda Paradaíso. In a little packet beside the body of Lorenz were faded letters and notes, inscribed in German. These were turned over at a later date to the German consular authorities. Whether they contained any secrets has not been divulged.

In the capitals of South America the Galápagos Islands hold as much of mystery and intrigue as anywhere else in the world. The archipelago straddles the equator far beyond accustomed lanes of shipping. Sometimes excursions to the Galápagos are promoted in Guayaquil, Lima or Panama. Occasionally 'round-the-world liners essay the voyage to satiate the curiosity of passengers.

Frequent visits of Allan Hancock Expeditions to the archipelago have been devoted to scientific exploration, but even scientists find interest in such amazing human affairs.



SQUARE-RIGGED SCHOONERS still frequent the South Pacific, plying waters of the Humboldt Current and sometimes scooting around Cape Horn as they did in the days of the buccaneers. Above is the *Tellus* at anchor in the harbor at Callao, Peru. Callao is the principal port on the west coast of South America, serving the metropolis of Lima as San Pedro serves Los Angeles.



MOST FAMILIAR SIGHT to all who visit Lima is this great equestrian statue of General José de San Martín which stands in the center of the plaza bearing his name. He is honored as the great military leader who liberated Peru from Spanish rule in 1821. Lima was founded by Francisco Pizarro nearly three centuries earlier, on January 18, 1535, after that Spanish conqueror had tricked and put to death Atahualpa, last of the Inca kings.



MODERN LIMA impresses travelers as a city of marked contrasts. Four centuries of history and growth have contributed to varied architecture. The buildings above and below, fronting on the Plaza San Martín, are a modified French Renaissance of the colonial era. Crumbling ancient ruins of Lima's early days may be found within a stone's throw of the city's most modern structures. Lima is a shrine of history and art.





STURDY OXEN till rich soil in the valley of the Río Rimac, often alongside up-to-date power tractors. Even in agriculture Peru offers strange contrasts of the old and the new.

ANDEAN HEIGHTS shed their snow to form the Río Rimac which supplies the water of life for Lima and its gardens. Dependent on its rivers, the coast is almost rainless.





CUSTOMS HOUSE at Callao is imposing enough to suggest the wealth of commerce that flows through the port. Center of trade for all central Peru, Callao is a 1,000,000-ton harbor.

GRAVING DOCK at Callao adjoins new naval shipyard and arsenal, marking Peru's awakening to the needs of self-defense. Her vast resources play a big part in world trade.





ADOBE CONSTRUCTION reached an impressive stage in Lima at the time of the erection of her great bull ring. Immense arches above support part of the grand stands and serve to illustrate the art of utilizing mud in architecture. The President's box, below, is done in regal splendor with much gold leaf.





MOST PICTURESQUE area in Lima is the open-air market place where the old clings to the new with undying traditions. This is the native feria or fair, which in spirit corresponds to the periodical county fairs of the western United States of America. In reality it is just a market place for the display and sale of wares, but Peruvians make a game of it. To them, bargaining is half the fun. Scenes on this and the following page depict the spirit of the place which is mostly gay, rarely serious. One does not hurry the storekeeper here for his pride and his fun are more important to him than any sale. He clings to the carnival spirit of his forebears.



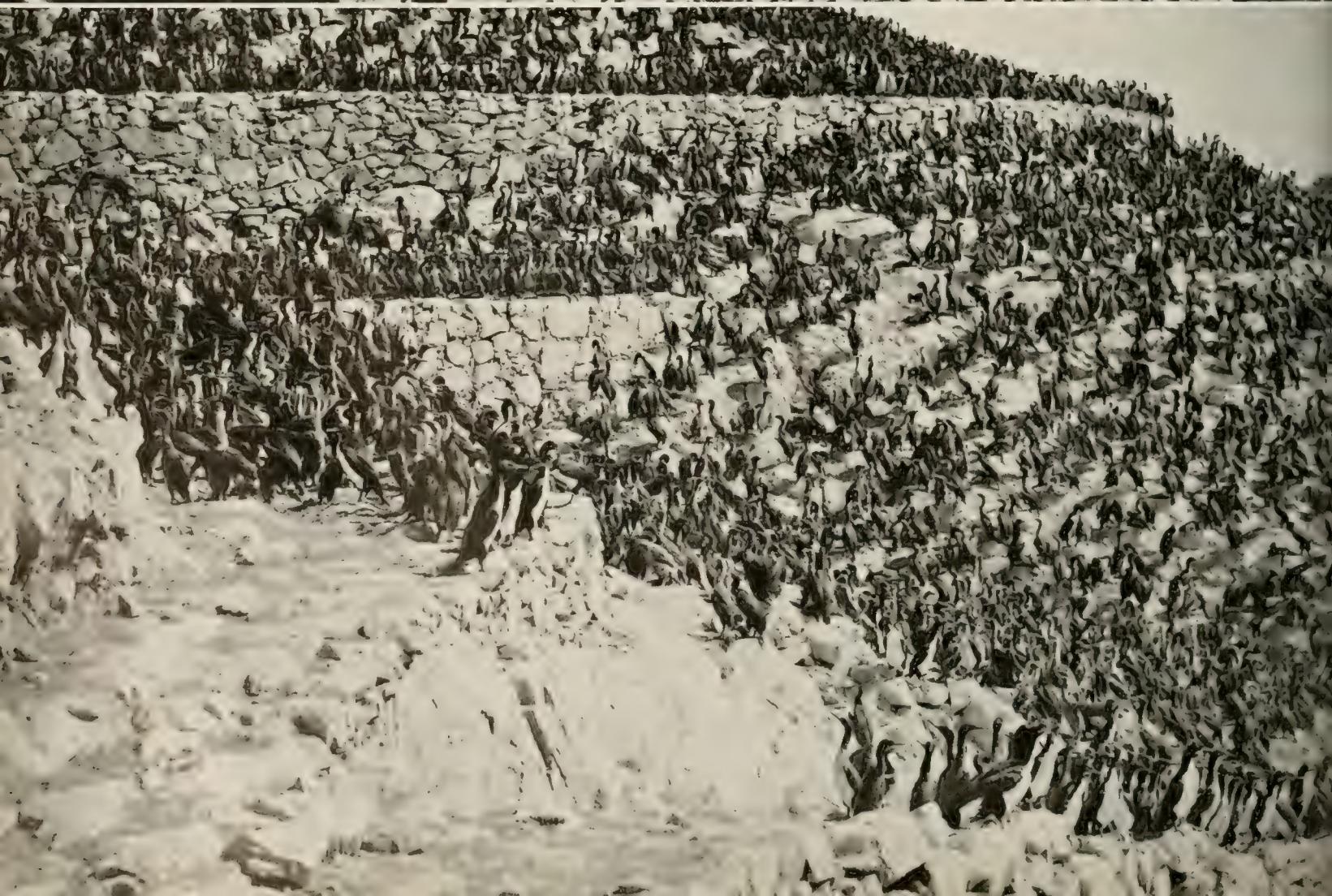


BIRD ISLANDS OF PERU have proven a tremendous source of wealth to the nation though the government was tardy in assuming control of their operation. The guano industry has been developed chiefly on a dozen of the larger islands. Above is the great modern lighthouse on Lobos de Afuera, one of the most northerly of the chain. Countless millions of marine birds nest on the barren, rocky islands which thrust their peaks skyward from the vast depths of the Pacific. An ideal climate is manufactured by the chill Humboldt Current which sweeps out of the Antarctic along the southwesterly shores of South America to dissipate itself in the equatorial mid-Pacific. Rain is unknown and the deposits of birds pile up year after year, almost pure guano and a perfect fertilizer.



MILLIONS OF BIRDS cover the islands when they are not away feeding at sea. The ocean is alive with anchobetas, small fishes, on which marine bird life is totally dependent. Should the balance of nature reduce the available food supply, the birds and Peru's great industry would suffer. When the birds are at home the islands loom black on the horizon. And when most of the birds are away feeding, the guano-covered islands are white as snow in the sunlight. On the opposite page thousands of guanayes, *Phalacrocorax bougainvillae*, are so dense among mound-like nests that one could not walk among them.





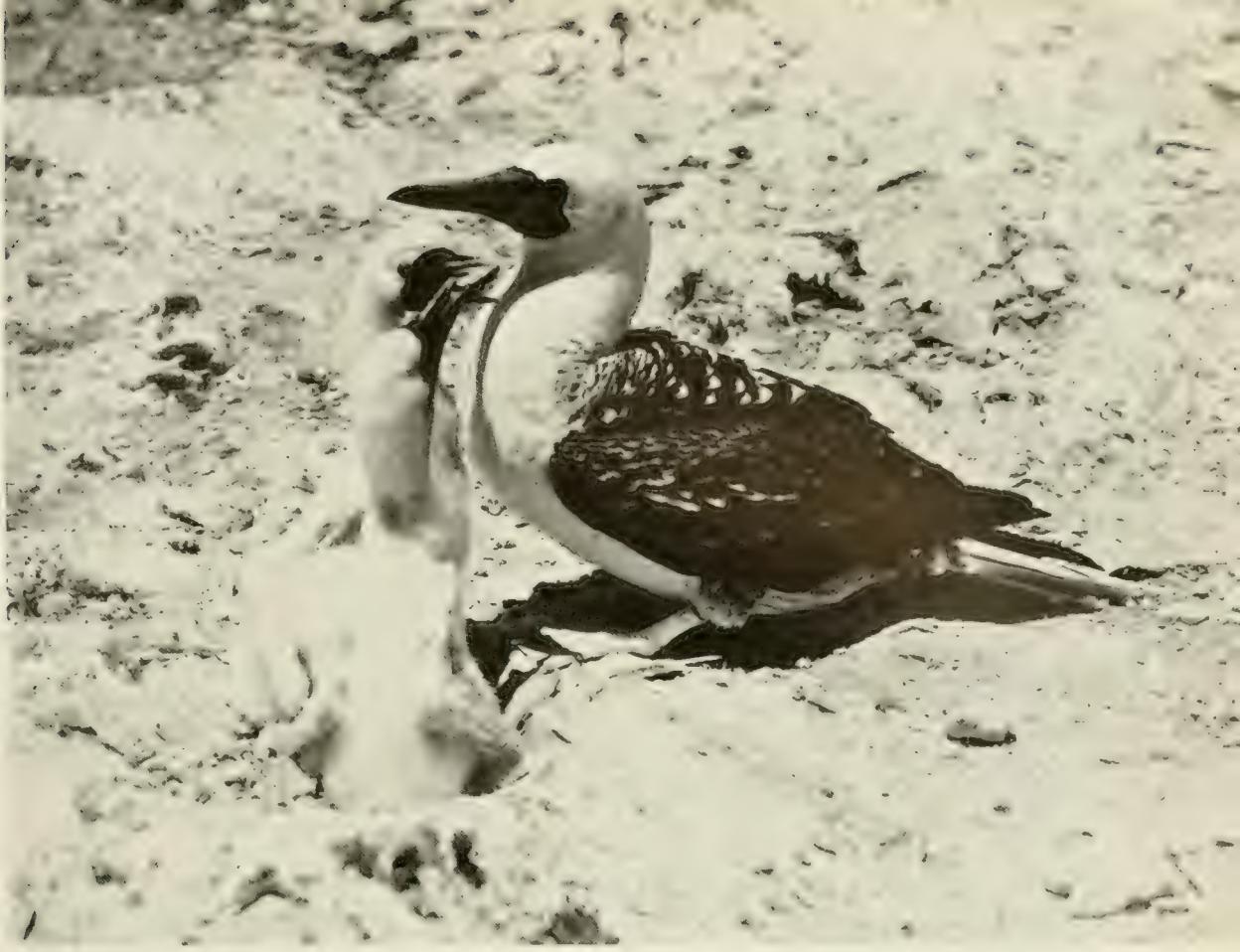


BABY ALCATRAZ at left is larger and heavier than a full grown domestic goose. Before these pelicans acquire adult plumage they often are heavier than their parents. Parent birds feed them well until the young are able to fly to sea and feed themselves. Above, and below, are young and adult *Pelecanus thagus*, an exotic species of pelican gaudily colored and somewhat larger than the common California brown pelican. On the opposite page are terraced sides of North Guañape Island, with hosts of guanayes at rest for the night.



ADULT PELICAN with a broken wing found on Lobos de Afuera island in starved condition was rescued and nursed back to health by Karl Koch, ornithologist of the expeditions.





GUANO PRODUCERS of the Bird Islands of Peru are chiefly guanayes, piqueros and alcatraces. Perhaps they are better known, respectively, as cormorants, boobies and pelicans. On the opposite page are baby and half-grown pelicans, *Pelecanus thagus*. Above an adult piquero, *Sula variegata*, is feeding her downy nestlings. The process, as with most birds, is that of regurgitation. Hungry young birds usually thrust their beaks down the throats of parent birds and help themselves. The piquero is a species of booby bird having variegated plumage. Below is a close-up of three downy stage nestlings.





WISTFUL INNOCENCE is expressed by this fuzzy young pi-quero languishing for a meal. Parental fidelity and responsibility are reputed to be absolute among these marine birds. Though the bird islands may be black with millions of birds, the parent birds never fail to find their own young and often battle fiercely to keep other youngsters from stealing food. On two visits to the bird islands of Peru the Hancock expeditions have accumulated excellent motion picture records.



SEA LIONS congregate in great rookeries along the south coast of Peru for the whelping and breeding season during January or early February. The species is unknown in northern waters, being peculiar to the region cooled by the Humboldt Current. The males have enormous necks and heads, shaggy manes, and sharp fangs which give them a leonine appearance. They even roar somewhat like lions of the veldt. A full grown male *Otaria byronia* may weigh 1200 pounds.



BOULDER STREWN beaches outside Port San Juan, Peru, about fifteen degrees south of the equator, are the usual breeding ground of the Peruvian sea lions. The mating season follows the whelping season almost immediately. Huge males are fighting continuously with ambitious intruders and manage to hold their harems together only by strength and stratagem. One great bull may have as many as twenty females about him while other lovelorn males languish in the background. Again, a single pair may be seen in the rookery. The average harem contains five or six females. Fidelity usually is limited to a season.





MOTION PICTURES of the Peruvian sea lion rookeries are easy to obtain for the animals pay little attention to the invasion of man. But it takes plenty of manpower to obtain species worthy of being brought back for exhibition in the San Diego Zoological Gardens. As illustrated above, the males are much larger than the females and the latter are somewhat larger than the California sea lion common along the North Pacific coast. A pup is shown at the extreme right.



ENORMOUS BULL of the species is shown above, his shaggy hide ripped and torn by the gashes of repeated battles.

SHELTERING ROCKS of the extremely rough coastline afford the rookeries protection from the turbulent open sea.





WARY YOUNG BULLS are shown lined up on a remote beach, for the older bulls with harems battle them relentlessly during the breeding season. Persecuted and pursued, the youngsters flee from the slightest commotion. This photograph was obtained through the opening of a dark sea cave. Despite the roar of pounding surf and their own incessant barking and roaring, they skitter away at such a slight sound as the click of a camera shutter — or perhaps it is that they sense a strange presence in their domain.





ROPING AND NETTING of a great bull sea lion and a female of the species is illustrated in the photographs opposite and above. This work is naught to the task of hauling them up a precipitous cliff.



BABY SEA LIONS like this young critter have the disarming habit of bleating just like a kid. Grown up, they roar like lions.



LIFELESS TERRAIN of Point San Juan is evidenced in this photograph as a caged female sea lion and her pup are hauled over the brow of a steep cliff on an improvised sled. There is no vegetation on this rainless plateau above the sea lion rookeries. But there is life in the air for immense condors soar down from the heights of the Andes, 200 to 300 miles away, to prey on sea lion colonies during the whelping season. The great condor below had a wing-spread of nine and one-half feet.



PACHACAMAC

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PRAWLED along the coastal planes of Peru are the crumbling ruins of ancient cities which symbolize the rise and fall of great civilizations in prehistoric times. Some date back hundreds or even thousands of years. From artifacts left by the people archaeologists have been able to reconstruct bits of history and depict various cultures illuminating to modern man.

Not the least of these ancient centers of population was Pachacamac, on the banks of the Río Lurín south of Lima, great cosmopolitan capital of present-day Peru. Built atop a rounded hill overlooking the mouth of the river and the broad Pacific ocean, Pachacamac primarily was a massive temple of the sun, named after a solar deity. On nearby slopes and dunes lay the squat homes of thousands of people.

Today the site is littered with skulls and skeletons, bits of shattered pottery and fragments of artifacts of which graves have been divested. Treasure seekers and ghouls have done most of the digging, but sufficient intelligent work has been done to give scientists an insight into the life and customs of a forgotten age.

Pachacamac was recognized as a supreme deity among the Chimú and ancient peoples of the central coastal region of Peru. Legend has it that he was a son of the sun. More than likely this was an Inca version of an older legend. The evidence is that Pachacamac was regarded as the founder of agriculture. From Quechua the name is interpreted to mean "soul of the universe." Originally the Quechua language was not spoken along the Peruvian coast, but it became the official tongue of the Inca empire.

Archaeological opinion is that Pachacamac was merely a local variant of the greater deity



Burial Urn

Viracocha whom ancient Peruvians believed in as a creator god. Viracocha, according to legend, created the world and peopled it, filled the sea with fish and gave to each animal its attributes. He also created the sun, moon and stars, and caused thunder, lightning, rain and hail.

Among the earliest inhabitants of South America agriculture was unknown, so Pachacamac must have arisen as a deity at some rather advanced stage of culture.

When early man wearied of a nomadic hand-to-mouth existence and discovered the comfort, convenience and security of agriculture he had to devise tools to till the soil. Crops called for storage so he began to make vessels. More or less permanent residence in a given locality called for shelter and he began to erect homes. The practice of agriculture afforded him seasonal leisure which was turned to inventiveness.

Other nomads watched and copied these developments. Out of farming, community life began. Competition in the improvement of conditions of living evolved. Leadership emerged. Culture arose. Successive peaks and valleys of culture can be interpreted in terms of superiority and inferiority.

From the golden age of Inca supremacy in South America the sequence of cultures can be traced backward an estimated two thousand years. Authorities differ, but it is generally agreed that man inhabited the New World more than ten thousand years ago, possibly as much as twenty thousand years ago. There are tremendous gaps of many centuries in the reconstruction of history. Several of the most advanced civilizations which have been deciphered seemingly emerge full-blown, though they must have developed very slowly over vast periods of time.

Along the coast of Peru the oldest civilizations are supposed to be Early Chimú, Early Nasca and Ancón. The ruins of Pachacamac reflect a little of each of these cultures which places it as of later date. More importantly Pachacamac gives evidence of pronounced Inca influence. Inca civilization emerged at Cuzco and spread by conquest throughout Peru and Ecuador.

A handful of Spaniards slew the last of the Inca kings and their empire collapsed some four hundred years ago, but traditions of the sun-worshippers live on.



CRUMBLING WALLS of Pachacamac once loomed in mighty ramparts atop a rounded hill overlooking the broad valley of the Río Lurín and vast expanses of the blue Pacific. Pachacamac was an enormous temple of the sun erected to honor an ancient deity of that name. It is freely translated from the Quechua to mean "Soul of the Universe."



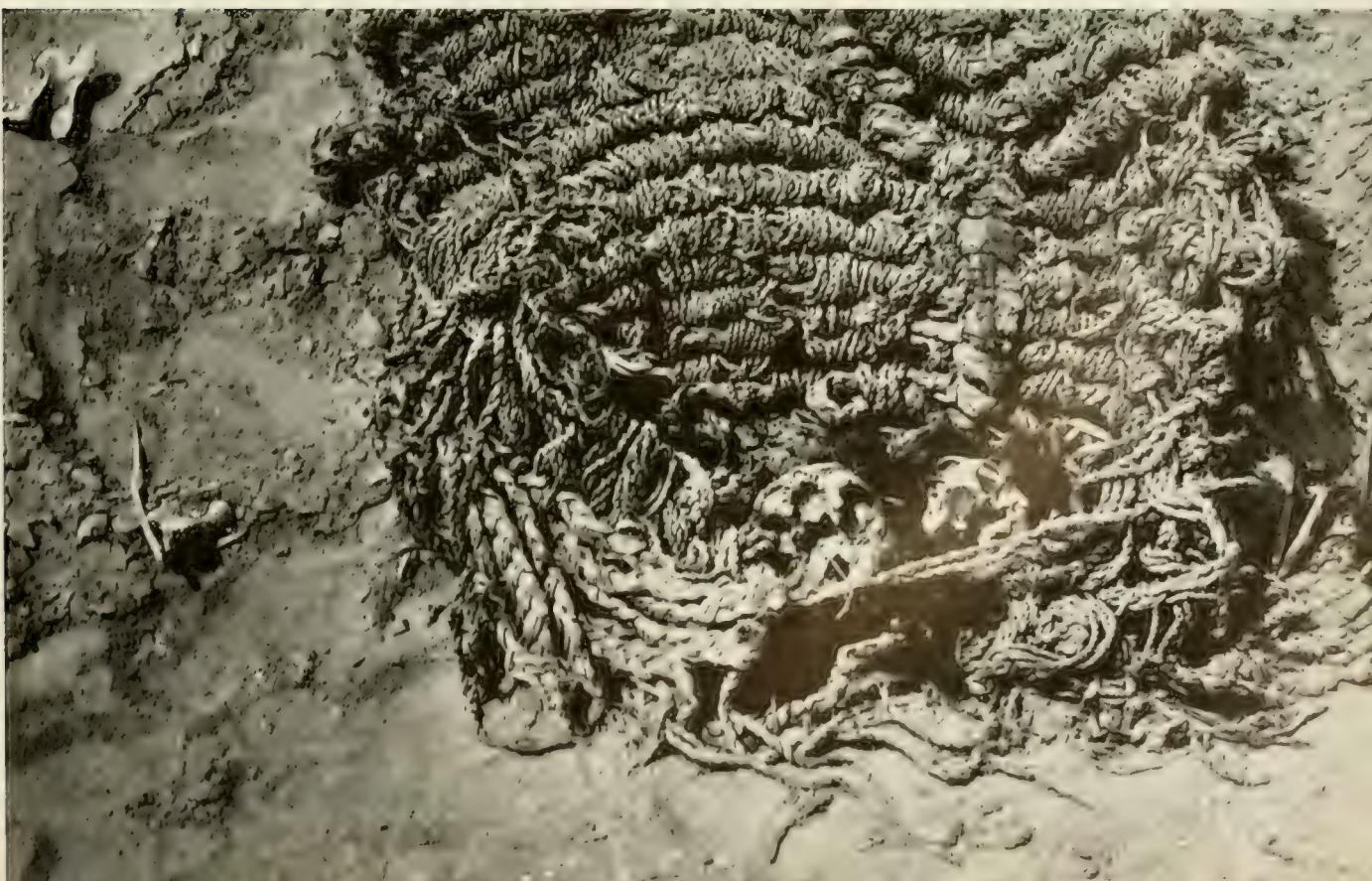


MASSIVE BUTTRESSES of adobe brick still retain some semblance of their original shape for the region is almost rainless and the only erosion is due to sun and wind. From the rocky islet in the distance the ancient coastal Indians quarried rock which was used in some foundations of the temple as shown below. Adobe bricks were laid atop the stones.





BURIAL GROUNDS at Pachacamac are littered with thousands of skulls and skeletons excavated during recent centuries. Even so a previously untouched grave is found occasionally, as below. The ancient burial mat, woven in the shape of an urn closed at the top, contained three skeletons, apparently those of parents and child. Fine fabric wrappings were still partly intact.





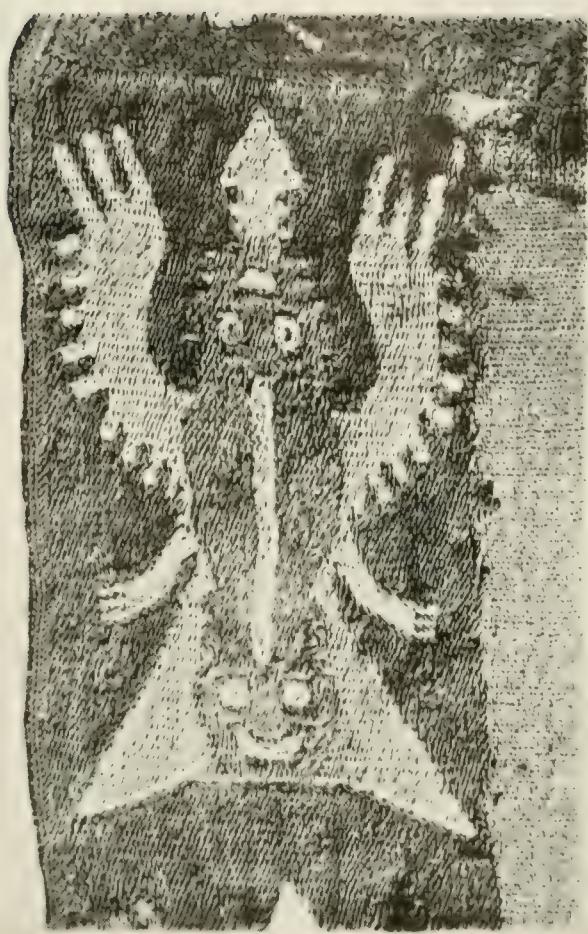
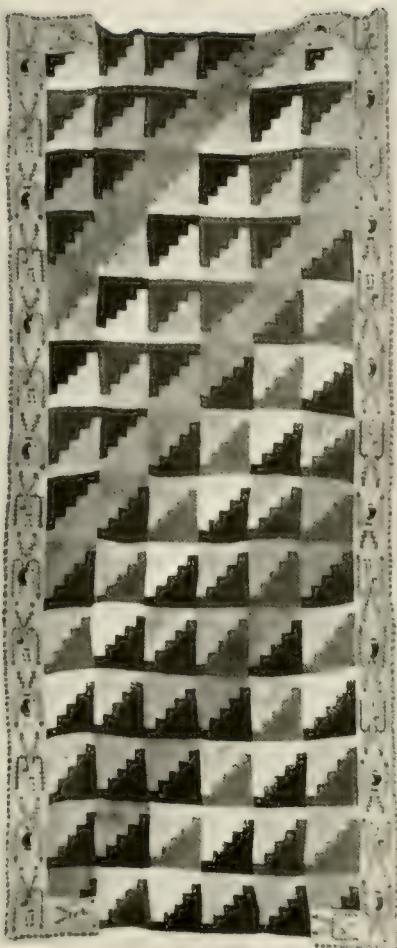
INCA INFLUENCE is seen in this adobe structure, obviously much more recent than the earlier construction at Pachacamac. While there seems to be some disagreement among authorities as to the age of Pachacamac, it may well spread over a period of 1500 to 3000 years ago. It is certain that the ancient coastal Indians first came under the influence of the Quechuas of the Andes, whose language later was the official language of the Inca Empire. All, in one form or another, were sun-worshippers.



PERUVIAN MUMMY stripped of burial wrappings as it appears in the exhibit of artifacts in the National Museum at Lima, Peru. The skull is capped with plates of gold, linked together after the fashion of medieval coats of mail. A heavy necklace of beads, gold chain and teeth, rests upon the shoulders. There are two vessels of copper and hide, one beneath the left arm, and one between the legs. All who died in ancient times in this region were buried in a sitting position. Sometimes the bodies were placed in urns.



NATIONAL MUSEUM at Lima, Peru, is the world's finest treasure-house of Peruvian artifacts. It is widely known as the Inca Museum, for it reflects the art of the Incas. Its rarest treasures, however, date back centuries before the era of the Inca kings. Some students place the earliest culture of Peru as far back as ten thousand years. At any rate, Peru developed the highest culture on the South American continent, including arts long since forgotten. Ancient textiles and figurines in the National Museum are shown on the opposite page.





REMARKABLE EXAMPLES of ancient Peruvian pottery are shown in the accompanying photographs from the National Museum. Figures and decorations were given an extraordinary realism which did not often affect utility. Archaeologists have discovered the use of as many as nine distinct shades of color on a single piece of pottery. Ceramics of many known ages in Peru contribute to knowledge of the rise and fall of ancient civilizations—the development and decadence of art.



RIOBAMBA

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RIOBAMBA nestles in the foothills of the towering Andes of Ecuador, a city of sharp contrasts and of colorful character. It is a sparkling jewel set in the rough-hewn diadem of an ancient empire of the Inca kings.

Austere in the distance, Mount Chimborazo rises in snow-clad majesty to an elevation of 20,468 feet, the loftiest peak in this vast land of fearful heights and tortuous grades. On either side her snows feed sparkling streams which descend to gurgle through dank tropical jungles. But aloft is the land of the Children of the Sun.

Clinging to traditions of a forgotten age the Quechua Indians live among the mountain fastnesses of Ecuador and Peru in much the same fashion as their ancestors did hundreds of years ago. They till the soil of fertile two-mile-high valleys and broad rolling plains; graze their flocks amid the hills; and hold themselves aloof from the encroachment of modern civilization.

Yet the proud Quechuas invade Riobamba by the thousands every Saturday. That is their market day; the traditional day of their feria which corresponds in a way to a midwest county fair. No able-bodied, self-respecting Indian would miss the weekly event if he could help it, for then the carnival spirit reigns.

Perhaps the weekly market day is a relic of the ancient past. The Quechuas have outlived the rise and fall of successive civilizations. Theirs was the language of the Inca empire which spread its gilded influence from Colombian borders to the pampas of the Argentine. They never were conquered, for they did not fight. When Francisco Pizarro destroyed the last of the Inca kings he merely effaced leadership and the Indians returned to their ancient ways, tolerating but never acknowledging Spanish rule.

As many as twenty thousand Indians may crowd their way into Riobamba on market day. Most of them walk. Rather, they trot, for it is a peculiarity of the people that they shuffle along as though always in a hurry. And some cover incredible distances in a short time. Many travel as much as fifteen or twenty miles with heavy burdens on their backs, taking their goods to market. Rarely do they ride. Women never do. If the family boasts a burro or llama, it will always be the man who rides. Usually the beasts are burdened with products of the soil on their way to market. Enroute homeward, a man may ride. Like women, the children walk.

Riobamba boasts a large assortment of market places, the principal one being the great square which accommodates the grain market. Indians carry their grain to the city in great bags, which may weigh eighty to one hundred pounds. Reaching the square they open the bags to display the grain, offering small quantities for sale for a pittance. This is more fun than peddling the whole bag at once to a wholesale buyer. The Quechuas love to haggle.

On other squares or vacant lots will be fruit and vegetable markets, places where livestock is sold either butchered or on the hoof, a hide market, textile market, clothing market, hat market, pottery market—dozens of booths or squares where one may buy or sell anything from necessities to trinkets.

Skilled in primitive arts the Quechuas manufacture fine homespun fabrics from vicuña, alpaca and llama wool, as well as that of domestic sheep and goats. They are far more interested in the products of their own domain than they are in the flimsy goods or fancy gadgets of civilization's machine age.

Ponchos woven by hand of homespun wool are universally worn by the Quechuas, young and old. They serve as overcoats, rain capes, sun shades and sleeping robes. No matter what the temperature the Indians never are without them. Purchases are secreted in the folds of the garment or packed in a length of cloth slung across the shoulders. Hats too, are a fetish. The natives make their own of hand-beaten felt.

Highland hat makers have never reached the pinnacle of art in manufacture that has been achieved by lowland Indians who weave the so-called Panama or "jipijapa" hats worn by cosmopolites throughout the world. Perhaps the eternal struggle for sustenance in the high country has provided the Quechuas little leisure time for development of ancient arts. Their forebears knew the secret of tempering copper, but the Quechuas have lost much simpler arts.

Habits and customs of these primitive peoples have been recorded at length by historians and archaeologists but they have never been fully portrayed; much less understood. The interest of Allan Hancock Expeditions in the Quechuas has been wholly pictorial, and excellent color films of a market day in Riobamba have been accumulated for educational purposes. The intent is to encourage further investigation into subjects of scientific import.



MARRIAGE CUSTOMS among the Quechuas make a wife the servitor of the family. In hundreds of years the routine of existence has changed but little. This brave and his wife posed on a roadside near Riobamba.





JEWELED HANDS of a typical Quechua matron are adorned with native hand-beaten silver rings set with uncut precious stones after the fashion of the ancients. Her expression is characteristic of her undying race.





QUECHUA WOMEN toil ceaselessly with their hands. With phenomenal dexterity they twirl slender spindles balanced with whorls of graven stone or precious metals, spinning wool from primitive distaffs. Their garments are homespun. Long belts, which usually encircle the waist several times, bear intricate patterns and are highly prized for their beauty and symbolism.



THATCHED HUTS dot the plains of the Andean plateau around Riobamba where thousands of Quechuas live today in much the same fashion as their ancestors did hundreds of years ago. To the casual visitor it seems an unchanging world. But the Quechuas have known heights of successive civilizations and the depths of disorganization and despair. They struggle on through generations, persevering in privation; a stolid, patient, stalwart people, highly skilled in simple primitive arts.



COBBLE-STONED STREETS of Cajabamba, Ecuador, grow dusty from the ceaseless tread of barefoot Quechuas. Narrow lanes of larger, flat stones form the footpaths which are worn smooth. Even though buildings go modern in the larger Andean centers of population, the countryside is primitive and customs change but little.



BURDEN BEARERS of amazing strength and endurance, the Quechuas go to market carrying huge earthen ollas, bags of grain, ricks of firewood or any salable product which affords them excuse to visit the city on the day of the feria, which is their market day. In Riobamba the carnival day is Saturday. At such times there may be 20,000 Indians in the city. Like a midwest county fair, it is an event the natives would not miss for anything. Some travel fifteen or twenty miles afoot.



QUECHUA MOTHER and babe display Indian characteristics distinctive among earliest inhabitants of South America's highlands but still within the great Mongoloid division of man. Oddly enough, the baby has freckles.





INDIAN WOMEN usually hide their faces from the camera, probably because of a widespread superstition that it takes their soul away. Touched by the white man's civilization, this group displays machine-made garments.





TINY TERROR of the Toros is this little tike who wields a mean whip on the rump of a clumsy bovine en route to market in Riobamba, Ecuador. Just like his Quechua Indian father, the lad wears a native-made sombrero and poncho. He handles a heavy burro whip with as much dexterity as his elders



MOUNT CHIMBORAZO rises 20,468 feet skyward in the background of this panorama showing Riobamba's grain market

BURRO TRAIN arriving in Riobamba on market day is shown below. At left is an array of typical roadside lunch stands





GRAIN MARKET in Riobamba as seen from window overlooking the great square is one of the most colorful scenes to be found in the Ecuadorian highlands. Indians tote their huge bags of grain to market, usually on their backs. From the opened bags they sell small quantities of grain to bickering customers who usually stow their purchases in a fold of their ponchos. On the opposite page are eloquent illustrations of the burden bearers and their method of carrying heavy loads on their backs.





MASCULINE TYPES found among the proud Quechuas in the mountainous regions are shown here. Note that every male carries a burro whip somewhere about his person. These are their only weapons and the men are amazingly adept with them.





MODERN BUILDINGS line the main thoroughfare in the busy metropolis of Riobamba, a rapidly growing commercial center on the trans-Andean railway which connects the seaport of Guayaquil and the Ecuadorian capital, Quito. Below are typical Indians.





PARAMO GRASS on the back of this shaggy burro insulates a pack of snow from the heights of Chimborazo which will be sold for a pittance in Riobamba and used to make a sort of snow ice cream. The grass will be used to weave sandals or belts. Probably the woman's husband will ride the burro on the home-ward trail. She will walk.



THATCHED HUTS with adobe-walled courtyards and fences of native cactus nestle beside a tile-roofed barn of modern adobe construction in the countryside near Cajabamba. The name is translated to mean box plain. Riobamba means river plain Eucalypti towering above native trees probably were imported from the Antipodes, as were those common in California.



PERPETUAL SNOWS cap Andean heights about the broad valleys and rolling plateaus where the Quechuas carry on their efforts at primitive agriculture. Above is a typical farmyard, with pigs, chickens, cattle, burros, and dogs in evidence. The burro, brought into service as a burden-bearer by the Spanish, is rapidly replacing the llama in this region, although the llama was a domesticated animal in the earliest known times.



AN ESKIMO IGLOO is suggested by the low tunnel-like entrance to this rounded hut, windowless and doorless. Bundles of reeds beside the entry are of the kind used in the earliest days for the making of canoe-like balsas in which the Quechuas navigated lakes and streams of the high mountain country. The reeds also are used to make floor mats called petates, for wall coverings and for pallets on which they sleep.



STRANGE WARES often are seen on the backs of traveling Quechuas along Andean highways. Above, at left, a typical mother carries a butchered lamb to market. At right the burden is hides and grasses. Below, a bald Indian lugs a pack of hides which may be made into chaps.





QUECHUA MAID of the Tixan area proves shy and retiring as strangers from afar seek her photograph. In a manner suggestive of the far east, she covers most of her face with a fold of her poncho, a custom prevalent throughout the Andes.



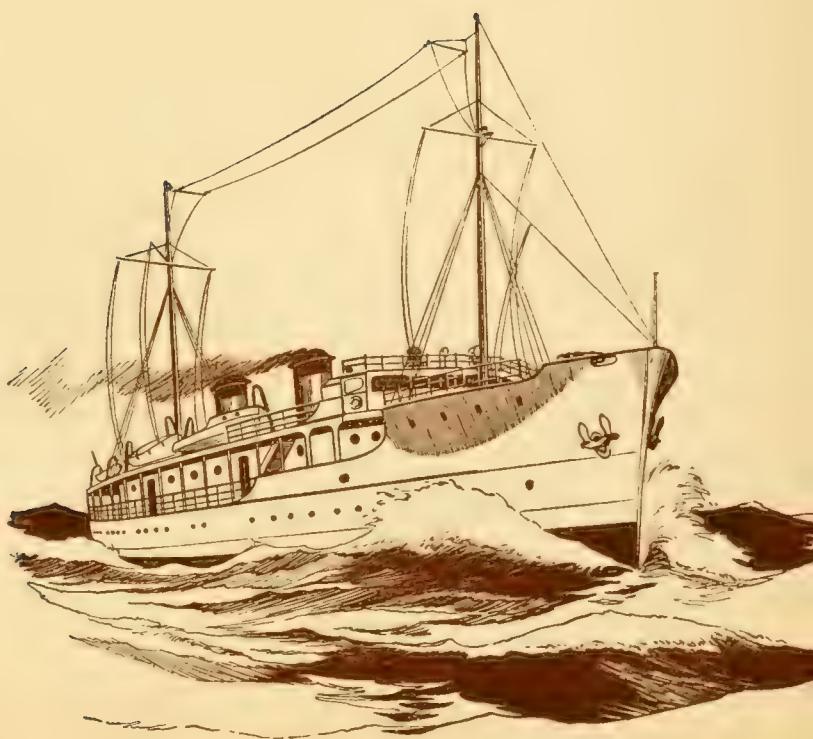


SCENES IN GUAMOTE on these pages tell a vivid story of the life and surroundings of the Children of the Sun. The fountain opposite comprises a community water supply and perforce becomes a sort of crossroads of the world in the two mile-high plains country. Ancient Pipes of Pan played by two youths on their way to market, are constructed of reeds. From them, natives produce a weird sort of music having no recognizable melody or rhythm. Above is a typical tatterdemalion of the district whose mode of dress resembles that of the ancients.



PIGTAILS AND PIGLET create a picture which seems to typify the youth of a vast, picturesque land. The little girl is tending the young porker by standing on its leash, while her parents dig for potatoes in the field nearby. So-called Irish potatoes are not Irish at all but originated in the highlands of South America. The tubers were taken to Europe by Spanish conquistadores and after some two hundred years suddenly flourished under Irish cultivation, ultimately spreading throughout the civilized world as a principal article of human diet.

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